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# Family Life Course and the Timing of Women's Retirement – a Sequence Analysis Approach

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## ABSTRACT

Based on longitudinal data from national Swedish registers, family life course dynamics for all women born in 1935 in Sweden are explored for the period 1990–2006. Focusing primarily on the existence and geographical proximity to parents, children, and grandchildren, assuming that the family life courses affect the life situation as well as strategic decisions, this longitudinal study uses a holistic approach, analysing how different types of family life courses are associated with socio-economic conditions as well as with the timing of retirement. The primary task was not to identify the causal determinants of work life exit but rather to unfold how retirement transition is entwined into the different types of family life courses, whereby retirement and family ageing are different sides of a multifaceted transition period. By using sequence analysis, the family life courses were structured into sequences and durations of states and different family life course categories were identified. The sequence analyses reveal a complex relation between retirement decisions and having family members around. Early retirement was associated with a category with few relatives but also with a category with two younger generations present, while we found no strong association with early retirement for categories in which the old generation was around for a longer period. Late retirement was associated with belonging to categories

characterised by late family formation and having children at home. These differences in retirement behaviour were also significant when controlling for education level, marital status, and type of region in a Cox regression. © 2015 The Authors. *Population, Space and Place*. Published by John Wiley & Sons Ltd.

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## INTRODUCTION

A large body of literature emphasises the importance of intergenerational family ties for care, support, and social relations, despite trends of individualisation and modernisation (Bengtson, 2001; Aboderin, 2004). Even in countries with strong welfare institutions, family support tends to play an essential role throughout the life course (e.g. Hank, 2007; Szebehely & Trydegård, 2012). In everyday life and in strategic decisions, the presence of relatives could be vital for both the young and old generations; having adult children or old parents around may facilitate daily activities and enrich social life (Bolin *et al.*, 2008a; Hjälms, 2011). Moreover, important life events may alter the life situation of both the old and young generations: when a new child is born, when sons and daughters leave the nest, when the parents retire from working life and when they finally die. However, family patterns may also trigger important life decisions. Parents may move closer to their child when a grandchild is born (Pettersson & Malmberg, 2009)

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or decide to retire when their elderly mother or grandchildren need care (Bolin *et al.*, 2008b). Alternatively, the increasing labour market participation of older women may influence their possibilities to care for grandchildren (Hank & Buber, 2009). In this way, the preconditions for living together, assisting, supporting, and caring are shaped by events and decisions by family members over the family life course and result in long-term and short-term periods of presence and absence, by proximity and distance to other family members, and by states of dependence and independence.

New patterns of ageing families have been subject to extensive research (for an overview, see Silverstein & Giarrusso, 2010), often with a focus on one specific family relation such as parents and children (Rainer & Siedler, 2012; Holmlund *et al.*, 2013) or siblings (Miner & Uhlenberg, 1997; Blaauboer *et al.*, 2013). By contrast, we herein apply a more holistic view of ageing families and apply a sequence analysis approach to study the time-space dynamics of family members in up to four generations. Since we assume that the family life courses affect the life situation as well as strategic decisions, we explore how different types of family life courses are distributed in the population and how they are associated with socio-economic characteristics and the timing of the retirement transition. We analyse the family life course of Swedish women born in 1935, aged 55 to 71 years, a phase of transition for most people.

Here the primary task is not to identify the causal determinants of work life exit but rather to unfold how retirement transition is entwined into the different types of family life courses, whereby retirement and family ageing are different sides of a multifaceted transition period. In the analysis, we also emphasise the importance of geographical nearness to relatives as well as the duration of presence and absence for the social relations as key features of the family landscape surrounding the women in focus in our research. Influenced by research on how young people's life paths influence their employment chances (Billari, 2001; McVicar & Anyadike-Danes, 2002; Aassve *et al.*, 2007), we examine family life courses of young-old women using sequence analysis and, further, the association between life course sequences and retirement using regression analysis.

Hence the aims of this study are to explore ways in which individual life courses are intertwined into family life courses, how these patterns are

distributed in the population of young-old women by socio-economic groups, and, moreover, how these family life courses are associated with women's retirement. Based on longitudinal national Swedish registers including annual individual records on family ties and place of residence, we examine the presence and proximity of elderly parents, children, and grandchildren over the period 1990 to 2006 for all women in the cohort born in Sweden in 1935. A major advantage of our data is its longitudinal information about family ties and place of residence covering the whole national population.

## THEORETICAL FRAMEWORK AND PREVIOUS RESEARCH

### The Family Landscape

While the consequences of demographic ageing have been intensively scrutinised on a macroscale, less attention has been paid to changes on the network level and to the consequences of these changes. However, in the literature on demographic change and social relations, there is an extensive body of research on age composition in families (Harper, 2003; Murphy & Grundy, 2003) and on the distance between, for instance, elderly parents and adult children (e.g. Hank, 2007; Malmberg & Pettersson, 2008). But, as claimed by Silverstein and Giarrusso (2010), the research on family ageing is mainly segmented by type of relation, while large-scale holistic analyses of how the family landscape is altered by the current demographic trends are basically absent in the literature. One reason for this could be the lack of available national data on family ties in most countries. However, the Swedish administrative registers allow us to investigate aspects of the time-space dynamics of the family landscape for almost all women in different cohorts and how they are associated with another important change transition in this age group, the retirement transition.

A point of departure for our research is the recurrent message on the relative importance of the extended family and intergenerational exchange for care taking, support, and social contacts. Although the importance of families has also been questioned, Bengtson (2001), for instance, has argued that the extended family is becoming increasingly important as the average nuclear family is becoming smaller. Even in countries like

Sweden where the welfare state is strong, family support is crucial and the access to relatives is vital for the everyday life of both the old and the young; several studies indicate that the young generation receives more support from the older one than the other way around (Grundy & Henretta, 2006; Halleröd, 2006; Albertini *et al.*, 2007; Szebehely & Trydegård, 2012).

Yet another key issue is the impact of population dynamics on family structure: how migration, deaths, and births influence the age and generational composition in families; how the number of one-generation, two-generation, three-generation, and four-generation families evolves; and how geographical proximity to relatives in different generations changes. In line with the so-called *beanpole hypothesis* (Bengtson, 2001), the current population trends of increasing longevity and decreasing fertility will result in fewer persons in each generation but more generations alive. As a consequence, intergenerational relations would be more important as compared to intragenerational ones. However, Swedish data show a decreasing number of three-generation and four-generation families due to growing intergenerational spacing (Lundholm & Malmberg, 2010).

A further topic in the literature is the changing distance between family members of different generations. While it is sometimes claimed that distances between family members should grow in times of increasing mobility (e.g. Meil, 2006), empirical research seems to show the opposite, for instance, Rogerson *et al.* (1993) in the US. Several studies from different contexts show that parents and adult children often live quite close to each other; this was found in studies on Dutch data (Michielin & Mulder, 2007), and similar results were found by Hank (2007) in a European comparison. A study based on Swedish registers found no increasing distance between adult children and elderly parents over time (Malmberg & Pettersson, 2008). Previous studies have also demonstrated that the distance between parents and children influences intergenerational contact (Cox & Rank, 1992; Lawton *et al.*, 1994; Hank, 2007; Michielin & Mulder, 2007; Fors & Lennartsson, 2008). Therefore, one's relative proximity to family members may also affect the paths and decisions over one's life course, for instance when retirement is considered.

Although the extensive literature indicates the importance of family members for care, support,

and sound social relations, the picture is ambiguous and several authors have highlighted the role of intergenerational conflicts as well as the relative independence of family members (Luescher & Pillemer, 1998). Intergenerational relations are often described with the term ambivalence, acknowledging that relations between adult children and parents can encompass both positive and negative feelings (Luescher & Pillemer, 1998).

While the official registers only capture the traditional family links, it is obvious that in times of the second demographic transition, other family links can be equally important for intergenerational contact. Evidently, a more thorough understanding of how family life courses shape the living conditions of the young-old would also call for analyses beyond the register-based approach we use here.

### Life Course, Family, and Sequences

Reading the literature on life course theory, two strands of thought dominate. One focuses on the influence of societal norms and institutions, whereby life events follow predetermined paths or life cycles (e.g. Rossi, 1955). In this tradition, the life course has been seen as 'internalised schedules and calendars'. The other perspective highlights the uniqueness of life courses, shaped by individual circumstances and preferences emerging over life (Billari, 2001; Baizán *et al.*, 2002). A major theme in previous research is the changing pattern of individual life courses and a destandardisation of life courses (Brückner & Mayer, 2005; Elzinga & Liefbroer, 2007; Widmer & Ritschard, 2009), whereby the timing of first birth, marriage, the spacing between siblings, retirement transition, and the final passing away become less fixed in time and the combination of different life courses in the family may result in even less standardised family life courses.

In his works, Hägerstrand (1975; Hägerstrand *et al.*, 2009) elucidated how intertwined life trajectories shape individual life courses and analysed how people's paths through time and space are strongly constrained by ties to relatives. From a similar perspective, Elder (1977) stressed the need to broaden the life course analysis and introduced the family life course perspective.

Drawing on these theories, we here use sequence analysis, which in contrast to life event analysis focuses simultaneously on the ordering

of events and on the duration of states (Billari, 2001) by considering life trajectories as the unit of analysis. Sequence analysis is often used in longitudinal studies with categorical time-dependent data in order to analyse the data from a holistic perspective. The method has been used in sociology since the 1980s, the first application being in Abbott's work on careers among musicians and steps in ritual dances (Abbott & Forrest, 1986; Abbott & Tsay, 2000). Sequence analysis has been used in research on young adults and their paths into working life and how this interacts with family formation (Billari, 2001). To date, the lack of longitudinal data on family networks at the national level has constrained research in this area.

### Retirement

In the current times of population ageing and increasing support burden, postponement of retirement has become a key issue in the public debate as well as in the social sciences. The literature on retirement determinants points to various push and pull factors including conditions in working life, occupational identity, economic incentives, health, attitudes to leisure, and the importance of social activities, for instance the preferences and opportunities for interacting with relatives (Blöndal & Scarpetta, 1999; Duval, 2003; Esser, 2005; Soidre, 2005; Stattin, 2005). The spouse's role in the timing of retirement has received substantial attention in the literature (Smith & Moen, 1998; Henkens, 1999). The impact of the family in a broader sense is also recognised (Szinovacz & Ekerdt, 1999; Bolin *et al.*, 2008b). Taking care of elderly parents, assisting adult children with babysitting, or enjoying the company of the younger or older generation could be reasons for labour market exit, while economic responsibilities for the older and younger generations may encourage people of retirement age to work a few more years.

Feldman and Beehr (2011) regard the retirement decision as a long-term process including a phase of imagining the possibility to retire, assessing the timing, and finally deciding to put the plans into action. From a life course perspective, retirement is seen as part of a longer process that includes not only the stage before the actual decision to retire and the phase when the

retirement decision is made but also the post-retirement phase since the expectations of future outcomes will affect the actual decision. From a transitional perspective, the decision to retire may be influenced not only by strategic acts, anticipating life as a pensioner such as moving to a smaller house, to the countryside, or closer to parents or children and grandchildren, but also by more immediate events such as the death of one parent and the need to care for the other.

A key research topic in recent decades is the timing of retirement and the changing retirement trends observed in many countries, with an increase in early retirement followed by a tendency toward retirement postponement (Chomik & Whitehouse, 2010; D'Addio *et al.*, 2010). While the timing of retirement used to be structured mainly by rather fixed legal regulations and rights, the option to retire earlier has long influenced the trends while an increasing retirement age has followed as a consequence of the new incentives to encourage longer working lives. Thus, the timing of retirement is becoming more flexible.<sup>1</sup>

The cohort investigated consists of women who became adults when the housewife model was still dominant in Sweden and many entered working life only after the nest was emptied. Their ties to working life may have been weaker than for the men of the same cohort, and their occupational identity may not have been as strong. Although notions of the gender-specific influence on family patterns may be stereotyped, we would expect to find a stronger relation between family life courses and women's retirement decision, compared with men.

### DATA AND METHODS

In this study, the analyses are based on data from the Linnaeus database (Malmberg *et al.*, 2010) and contain information from Swedish administrative registers provided to the research group by Statistics Sweden. The data include annual information on the whole population resident in Sweden. However, we restrict our attention to a cohort born in 1935 in order to have the possibility to observe individuals' exit from the labour force. We further focus our analysis on women, expecting that women take greater responsibility in caring for relatives, thus foreseeing family conditions to be more influential

for women's life decisions as compared with men's. Thus, the population investigated consists of all women born in Sweden in 1935 and residing in Sweden in 1990, thus allowing us to observe a period of 17 years, from age 55 to 71 years. The cohort consists of 36,207 individuals. Since the data hold information from the multigenerational register, it is possible to identify the parents, adult children, and grandchildren of the women born in 1935. Using the available information in the national registers, our data include registered biological and adopted children, as well as children of spouses.<sup>2</sup> We expect the family situation to differ not only between those who have living parents or not but also depending on whether the ageing parents live within daily reach. The same argument goes for children and grandchildren. Because our data also contain detailed information about place of residence, this allows us to map the proximity between these family members and identify those who live within daily reach, here defined as 50 km (Euclidian distance).

Based on this information on the women's family members, 21 different states were identified as a combination of three possible states for one's relation to elderly parents and seven states for the relation to children and grandchildren (see below). In order to limit the number of states, a woman born in 1935 is in the analyses defined as having a grandchild only if she has no children at home. Obviously, a small number of women do have both children at home and grandchildren, but we have included them in the category *children living at home* and disregarded that some also may have grandchildren. Moreover, we only include grandchildren aged 18 years or below since the older grandchildren are not registered in the household of their parents and their need for assistance and care from grandparents may be different from that of the younger grandchildren.

We also use a geographical proximity criterion when defining the states in which the closest distance between the mother and the child is considered. Thus, as long as a woman in the investigated cohort still has a child living in the household, she is defined as 'having a child at home'. Likewise, as long as one child lives within 50 km, a mother is defined as 'having a child living close by'.

For the relation to parents, we identify three possible states:

- No parent alive
- At least one parent alive who lives within 50 km (*Close by*)
- All parents who are alive live further away than 50 km (*Far away*)

For the relation to children and grandchildren, we identify seven possible states:

- No children (and thus no grandchildren)
- Children living at home (and thus no grandchildren)
- No child at home but at least one child living *Close by* and no grandchildren
- No child at home but at least one child living *Close by* and at least one grandchild who lives *Close by*
- No child at home but at least one child living *Close by*, no grandchild who lives *Close by*, and at least one grandchild who lives *Far away*
- All children living *Far away* and no grandchildren
- All children living *Far away* and at least one grandchild living *Far away*

In the next step of our analysis, the states were ordered into sequences, whereby each woman in the cohort had one state (by 31 December) for each of the 17 years investigated (1990–2006). The unit of analysis is the sequence, and the method used made it possible to study the properties of the sequence as a whole. The main idea, and strength, of sequence analysis is to compare different sequences from a variety of aspects. It is often interesting to examine properties of a single sequence (type, complexity) and pairs of sequences (similarities, distances, correlations), as well as sets of sequences (homogeneity).

In order to examine patterns of family life courses – duration and sequence of the different states – we first looked for similarities between pairs of sequences. Obviously, a woman who initially had no children, grandchildren, nor parents alive has a very dissimilar family life course compared to a woman with children moving out, grandchildren being born, and parents passing away. But also two women with many life events and many family members may experience very dissimilar sequences of

states. The timing of the events may be different, parents may die early or late, grandchildren are born in an early or late stage, and children may live close or far away. Here we have used the so-called Optimal Matching (OM) algorithm to identify dissimilarities between pairs of family life course. The OM algorithm provides a measure of dissimilarity (usually described as a distance) between pairs of sequences. The measure of dissimilarity (or distance) between two sequences used by the OM algorithm is based on counting the minimal number of steps it takes to transform one sequence into another using three operations: replacement (replacing one state with another), insertion (add a state to a sequence), and deletion (delete a state from a sequence).

If we compare the sequence of a woman with no relatives with a woman who had her mother alive during the first year of the sequence (only), but no other relatives, it would take one step to transform the first sequence into the other. Obviously, most sequences are more dissimilar, and it takes more operations to transform them into each other. The OM algorithm computes the number of steps necessary and thus the dissimilarity between the sequences.

The OM algorithm was originally designed for analysing DNA sequences (Sankoff & Kruskal, 1983), but the method was introduced into sociology by Abbott (1995) and has been used successfully within many areas of the social sciences; see Abbott and Tsay (2000) for an overview of the subject. The method was also used in a previous study on residential mobility biographies and in a similar way on Swedish register data analysing housing careers (Coulter & van Ham, 2013; Van Ham *et al.*, 2014).

Different costs for the three operations mentioned above are usually specified, and the dissimilarity (distance) between two sequences used in the OM algorithm is the minimum cost of the required operations for the transformation of one sequence into another rather than the number of required operations; see, for example, Abbott and Tsay (2000) and Wilson (2006) for a comprehensive discussion of consequences of different settings of the costs of the operations. In this study, we have used substitution costs based on the transformation rates in the data, that is cost one for insertion and deletion operations and two for replacements.

A cluster analysis is then conducted. Based on the matrix containing all the pairwise dissimilarities (distances), groups of similar sequences can be searched for. A Ward hierarchical clustering method is used on a randomly chosen subsample of 8000 individuals, since it was not possible to perform the clustering on the whole cohort (36,207 individuals). Height clusters were identified using silhouette profile. In a second step, the remaining individuals were classified into relevant groups based on the same dissimilarity (distance) matrix. The sequence analysis R-package TraMineR (Gabadinho *et al.*, 2011) was used to calculate the distance matrix and perform the hierarchical clustering.

In order to analyse the association between family sequences and socio-economic conditions, a number of individual socio-economic variables (education level, marital status, income, and location of residence) from the database were included in our analysis. The region where an individual lives is defined by the National Rural Development Agency's classification of municipalities

Further, in order to study exit from the labour market and its association with life course sequences, a Cox regression analysis was performed for age of retirement using education level, marital status, location of residence, and partner's retirement as covariates. Marital status and partner's retirement are time-dependent variables since these can change over time. As age of retirement, we have used the individual's age the first year the annual income from pensions exceeds the income from annual labour earnings. In the income from labour earnings, we have included the individual's income from salary and own enterprise as well as transfers connected to unemployment and labour market measures. Income from pensions includes occupational pension, old-age pension, and early retirement pension (sickness or disablement pension). This definition of retirement age was used earlier in Stenberg *et al.* (2012) and implies that a person who has once retired remains retired. Defining retirement age is bound to be arbitrary, because the transition to retirement has become blurred and the actual range of retirement age has expanded, making the transition longer and fuzzier (Kohli & Rein, 1991; Han & Moen, 1999). The retirement decision is a stepwise process, summarised in our definition in order to investigate its association

with life course sequences. It is worth emphasising here that because life course sequences are defined over the whole follow-up period during which retirement decisions take place, the Cox regression analysis has not been purposed to uncover causal relations but to investigate associations between the life course sequences and retirement timing decisions.

## RESULTS

The results of our analysis show a large variety of unique sequences of family life courses over time, even though we included only a few parameters in the analysis. While many family life courses have some similar features, there are often distinctive characteristics in terms of duration and sequences of different states. Yet, one aim was to identify the more general features of family life courses for the cohort during the life phase from age 55 to 71 years. In a first step, we therefore aggregated the data to identify the most common states and events over the 17 year period; see Figure 1. We found that the most frequent events were the death of parents and the birth of grandchildren, while migration and changes in the proximity between the family members were less common events. Neither the women investigated nor their adult children belong to age groups in which migration is very common, and most people are in fact long-term stayers. Partly due to the trends of increasing longevity, 94% of the cohort investigated still had a living parent at age 55 years but almost all experienced the loss

of their parents during the coming 16 years. Further, 45% of the women in the cohort had grandchildren at the beginning of the period investigated and 73% became a grandparent before age 71 years. In this population, 29% had a child living in their household at age 55 years, but in most cases, the nest was empty before the end of the time period. Of the 55-year-old women who had living parents, 66% lived within 50 km of them, and at age 71 years, 86% of the women with children had them within 50 km. As also shown in previous research, we found that the geographical distances between parents and children are rather small on average.

Figure 1 presents the distribution of the 21 different states in the cohort examined and reveals, for instance, how the state *having children and grandchildren close but no longer any parents* increased over time and was the dominating state (57%) by the end of the period. This contrasts with the situation at age 55 years when a large variety of states was found. Thus, over time the investigated cohort had become more homogeneous regarding the presence of and proximity to family members.

At age 55 years, as many as 85% of the women participated in working life. Although women born in the 1930s had experienced the housewife era of the 1950s and early 1960s, many had entered working life during the coming decades and by age 55 years the vast majority of them were in the labour market. Using our definition, the average retirement age was 62.9 years and as many as 81% had retired at age 65 years and

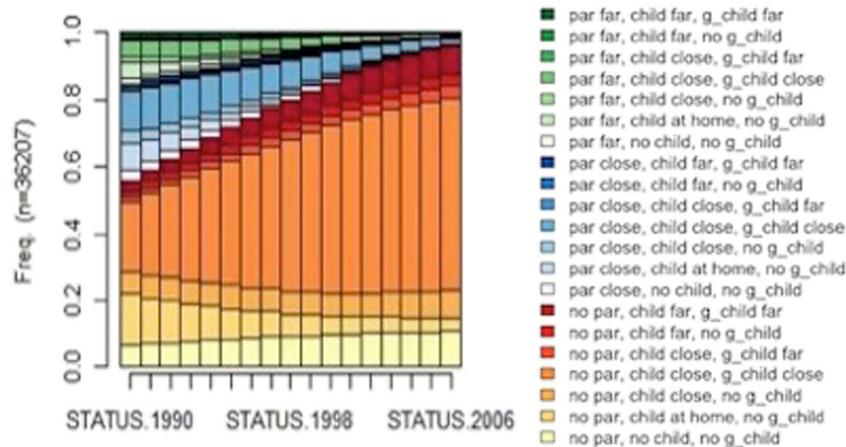


Figure 1. State distribution in the entire cohort. Proportion of the cohort in each state each year. The seven lowest states (yellow-red scale) corresponds to having no parent alive, the middle seven states (blue scale) to having a least one parent living within 50 km distance, and the top seven states (green scale) to having all parents alive living further away than 50 km.

98.1% at age 66 years. Retirement is of course also a major event in the phase of the women's lives, and the quite large differences in timing of retirement could be influenced by many conditions including income, education, and family situation. In the next step, we used cluster analysis on the sequences, identifying eight clusters. These clusters or categories of sequences represent different types of family life courses and have been named based on some of their distinct characteristics: *the local three-generation family, the one-generation family, the dispersed three-generation family, the two-generation family, the local four-generation family, the slow-starter crowded-nest family, the relocated four-generation family, and the relocated slow-starter family*. Each of the eight categories includes women with similar family life courses, and almost half of the women in the investigated cohort belong to the category *local three-generation family*. The rest of the cohort belongs to the other seven categories, containing between 11% and 2% of the individuals. The different categories represent a variety of rather different family life courses over the time span from middle aged (55 years) to young-old (71 years), that is during the retirement transition. These differences include the number of generations present, the geographical proximity to them, the timing of parents' passing away, and the duration of different states.

Comparing the different family life course categories, we find significant differences in the

average retirement age, from age 62.6 years in the *one-generation family* category to 63.3 years in the *relocated slow-starter* (see Fig. 2), which on a population level is quite a substantial difference. Moreover, when controlling for various covariates, we found that the relation between belonging to a specific category and retirement age remained, indicating that the family life course is related to the timing of retirement; see Table 1 and discussion below.

The distribution of the different states in each of these eight categories is displayed in Figure 3 and discussed below, where we describe the characteristics of the categories as well as the estimated associations between category, on the one hand, and socio-economic characteristics and retirement timing, on the other.

### The Local Three-Generation Family

In the largest family life course category of sequences – here called the *local three-generation family* – the ageing parents are either already dead when the individual is 55 years or die quite soon thereafter, while at least one child and often also grandchildren live within daily reach during most of the period observed. This category accounts for almost half of the women in this cohort (48.4%). Thus, although we find large heterogeneity of family life courses, here we have identified

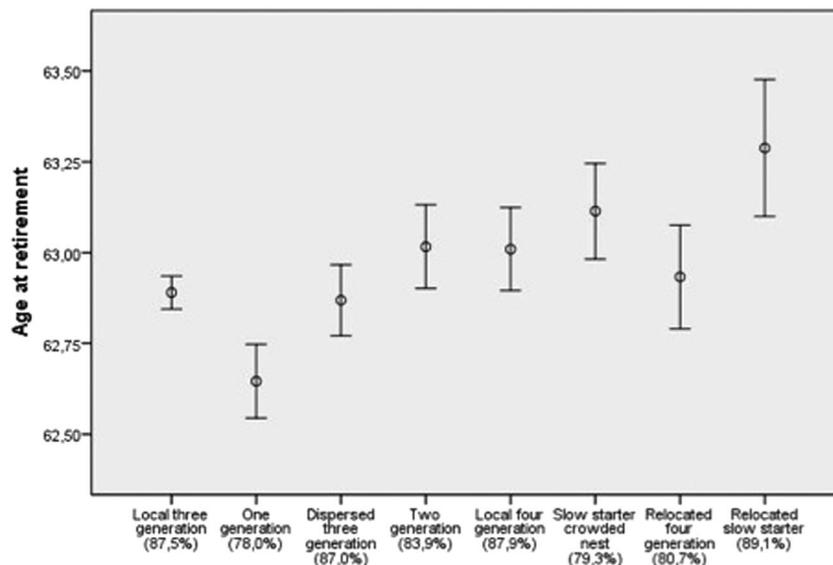


Figure 2. Mean age at retirement for the eight family life course categories with 95% confidence intervals. Proportion of the category participating in working life 1990 in parentheses.

Table 1. Variables associated with time to retirement using Cox Regression analysis,  $n = 30,824$ .

Variable	Values	Hazard ratio	p-value	95% confidence interval for hazard ratio	
				Lower bound	Upper bound
Region	Sparsely populated (ref.)	–			
	Accessible countryside	0.896**	0.008	0.825	0.973
	Urban	0.894**	0.007	0.825	0.969
Marital status (T)		0.818**	0.000	0.790	0.847
Partner retirement (T)		1.369**	0.000	1.324	1.415
Education	Low (ref.)	–			
	Medium	1.098**	0.000	1.070	1.126
	High	0.997	0.853	0.966	1.029
Family group	'Local three generation' (ref.)	–			
	'One generation'	1.060**	0.003	1.019	1.102
	'Dispersed three generation'	1.013	0.505	0.974	1.054
	'Two generation'	0.960	0.065	0.919	1.002
	'Local four generation'	0.967	0.132	0.926	1.009
	'Slow starter crowded nest'	0.892**	0.000	0.851	0.935
	'Relocated four generation'	1.007	0.786	0.953	1.064
	'Relocated slow starter'	0.909**	0.009	0.846	0.978

(T) – Time dependent variable.  
 \*\*Significant at 1%.

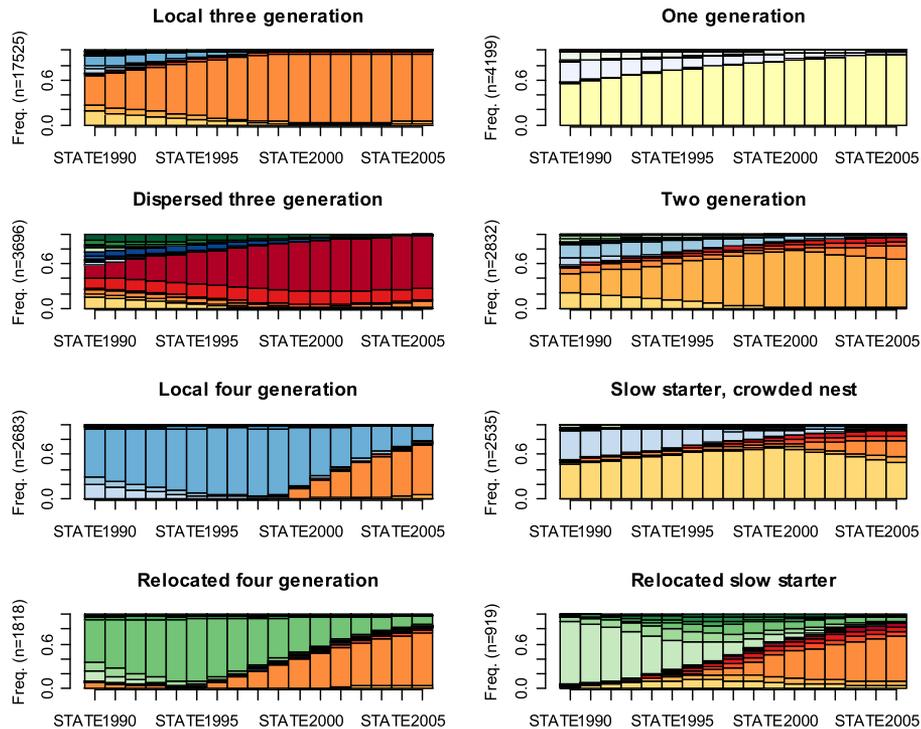


Figure 3. State distributions in the eight family life course categories; see Figure 1 for legend. We refer to the online version for improved readability.

one very common pattern embracing almost half of the women in the examined cohort.

The women in this group face a rather stable family situation over the 17 years and experience

on average 12.6 of 17 years in the most common state: no parents alive but children and grandchildren close by. So despite trends of increasing longevity, the local three-generation family with two younger generations is a dominant feature in the families of Swedish women born in 1935. Having had one's first child at an early age was yet another characteristic of women in this group, and from the multinomial regressions (Table 2), we find that low education is associated with the local three-generation family. Women in the local three-generation family have a high rate of participation in the labour market at age 55 years (see Fig. 2). The Cox regression controlling for various socio-economic covariates (Table 1) reveals that the women in this category are not extreme in their propensity to retire early or late.

### The One-Generation Family

Another distinct category is the *one-generation family*, constituted of childless women. Evidently, their family life course is relatively stable as the major transition is the death of their parents, if they were not already deceased before the daughter reached age 55 years. Being the second largest category, it contains 11.6% of the women, and we find (Table 2) that higher education and rural residence are associated with this group when compared with the largest category, the local three-generation family. Moreover, these women not only lack adult children and parents but are also significantly less likely to be married compared to other women.

If we hypothesise that the presence of family members and their need for support and care would trigger early retirement, we should expect late retirement in this age group. However, our analysis shows the opposite. This group has the lowest participation rate in the labour force at age 55 years (78%) and, among those working at 55 years, the lowest retirement age (Fig. 2). That they have a higher risk of retiring early compared to the local three-generation category is confirmed in the Cox regression (Table 1). One explanation for this could be the lack of economic responsibility for relatives or that people lacking social support have performed less well in the labour market. Yet another explanation for earlier retirement could be poor health; previous research has shown a positive effect on health of being married or having a partner (Rogers, 1995; Johnson *et al.*, 2000; Liu & Umberson, 2008).

### The Dispersed Three-Generation Family

The *dispersed three-generation family* category, including 10.2% of the women in the cohort, is in some ways similar to the three-generation family. Here we find young-old women who have parents at an early stage and also children and grandchildren. But in contrast to the local three-generation family, these women live far from their family members. This group is clearly characterised by high education and rural residence (Table 2). This family category is characterised by an overrepresentation of individuals who moved between municipalities between 1990 and 2006. We also find a similar retirement pattern in the dispersed three-generation family compared with the three-generation family.

### The Two-Generation Family

In the *two-generation family*, including 7.8% of the women in the cohort, the parents passed away early and the grandchildren appear at the end of the period or not at all. The women in this category are more likely to have had children late, to live in urban areas, and have children at home. The retirement pattern is not significantly different from the local three-generation family (Fig. 2 and Table 1).

### The Local Four-Generation Family

The *local four-generation family*, including 7.4% of the cohort, represents women who for a substantial part of the investigated period lived in a four-generation family with parents, children, and grandchildren, because of a late death of the oldest generation. They also differ from other categories by an early first birth. The women in this category experience a rather stable life course and remain in the same state for a long time. The local four-generation family is characterised by urban living and low education (Table 2). However, possible commitments to take care of elderly parents do not result in significantly earlier retirement for women in the local four-generation family category.

### The Slow-Starter Crowded-Nest Family

The *slow-starter crowded-nest family* represents 7% of the cohort and is distinguished from other sequences by a delay or absence of nest-leaving of

Table 2. Results from multinomial regression model of variables associated with family life course categories. Local three generation used as reference category,  $n = 36,122$ .

Variable	Values	'One generation' versus 'Local Three generation'	'Dispersed three generation' versus 'Local Three generation'	'Two generation' versus 'Local Three generation'	'Local four generation' versus 'Local Three generation'	'Slow starter crowded nest' versus 'Local Three generation'	'Relocated four generation' versus 'Local Three generation'	'Relocated slow starter' versus 'Local Three generation'
Region								
	Sparsely populated (ref.)	–	–	–	–	–	–	–
	Accessible countryside	0.742*	0.434**	1.110	1.619*	0.471**	1.010	0.856
	Urban	0.775*	0.314**	1.607*	1.537*	0.380**	1.505	0.884
	Not married (ref.)	–	–	–	–	–	–	–
Marital status								
	Married	0.247**	0.777**	0.737**	0.956	1.001	0.953	1.258*
	Low (ref.)	–	–	–	–	–	–	–
	Medium	1.111*	1.483**	1.124*	0.860**	0.947	1.374**	1.908**
	High	1.977**	3.483**	1.318**	0.725**	1.468**	1.851**	5.452**
	No (ref.)	–	–	–	–	–	–	–
	Yes	0.527**	0.793**	0.712**	1.101	0.536**	0.525**	0.816

\*\*Significant at 1%.

\*Significant at 5%.

the children. In this group, we find persons sharing a household with adult children, who for some reason never left the parental home. We find a strong association with rural residence (Table 2). The slow-starter crowded-nest family, including women who still have children at home, paradoxically has one of the lowest rates of labour force participation at age 55 years and at the same time one of the highest average retirement ages (Fig. 2). The latter is confirmed by Cox regression when controlling for covariates. The economic responsibility for the young generation could explain the late retirement.

### The Relocated Four-Generation Family

The *relocated four-generation family*, including 5% of the women, is distinguished from the local four-generation family category by the geographical separation from parents. When compared with the local three-generation family, this group is more urban and has a higher education. On the other hand, the relocated four-generation families have a similar retirement pattern to the reference, although their participation in the labour force at 55 years old is low to start with (see Fig. 2).

### The Relocated Slow-Starter Family

In the *relocated slow-starter family category*, the parents live for a substantial part of this period, and at a distance similar to the relocated four-generation family, but in contrast the children in the relocated family stay in the parental home for a substantial part of the period and grandchildren appear late, which means that the stage of the four-generation family is very brief or never occurs. Hence, the women studied spend a substantial part of this period as a middle generation in a three-generation family. This group has the strongest association with high education and marital status. This is the category with the highest rate of participation in the labour force at age 55 years and the highest average retirement age. This is the smallest of the eight categories, however, including only 2.5% of the women in the cohort.

To summarise, the sequence analyses did not reveal a straightforward relation between retirement decisions and having family members around. Early retirement was associated with the one-generation category with few relatives but

also with the local three-generation category with two younger generations present, while we found no strong association with early retirement for categories in which the old generation was around for a longer period. Late retirement was associated with belonging to the slow-starter crowded-nest and relocated slow-starter categories, characterised by late family formation, and having children at home. These differences in retirement behaviour were also significant when controlling for education level, marital status, partner's retirement, and type of region in a Cox regression.

### CONCLUDING DISCUSSION

For most people, the life phase from mid-50s to early 70s is a time of transition with changing family relations and an exit from working life. And since the family network still seems to influence many aspects of life in contemporary European societies as well, it is crucial for population research to scrutinise how the potential for social interaction at this stage of life is shaped by demographic events: how the family landscape is restructured by, for example, children leaving the nest, parents passing away, and grandchildren being born, but it is equally important to scrutinise the influence of the changing pattern of family relations on other life domains.

A novel contribution of this paper stems from the comprehensive and longitudinal analysis of family life course dynamics and how they are structured into sequences and durations of states. Thanks to the availability of longitudinal data on family links and place of residence, for the first time we have been able to map the family life courses of all women in a cohort on a national scale, including information on the presence of and proximity to old parents, children, and grandchildren. Recognising the importance of the complexity of these patterns, we have applied a holistic approach, analysing sequences of family life course patterns in relation to socio-economic situations and retirement from working life. One background to this study was the debates on postponed retirement and the roles of family in care and support.

In this paper, we have emphasised the diversity of the family life courses of young-old women in relation to labour market attachment. We introduced sequence analysis as a novel

approach to the analysis of family life courses and how these types of sequences were associated with socio-economic characteristics and labour market exits for the period 1990–2006. Rather than searching for the most significant determinants and causal effects of events and processes over the life course, we have mapped the complexity of these family life courses and further attempted to discover patterns in this multifaceted web of intertwined life trajectories. Through the analyses, the large variety of individual family life courses unfolded, allowing us to identify eight distinct categories of family life course sequences for the cohort of Swedish women born in 1935. And despite the heterogeneity in individual life courses, we also observed a large group of women who experienced a very stable period of their family life course in the age span 55–70 years, experiencing few transformations between states. Furthermore, we investigated potential associations between retirement decisions and the family life course patterns.

In the Cox regression, we found a significant association between the timing of retirement and belonging to several of the different sequence categories. This indicates that the family life course is related to the retirement decision. We argue that the retirement decision is a result of not only the current stage and events in the life course but also the life course as a whole, including anticipations for the future. It is likely that decisions related to family life courses, for example, moving closer/further to/from relatives, as well as to retirement, are taken somewhat simultaneously. Our analysis demonstrates that the interrelation between retirement decision and family situation may be very complex and that the correlation observed is not always the most expected one.

Since we know that women of retirement age often spend a great deal of time caring for their elderly parents, one could have assumed that the presence of parents would be strongly correlated to retirement. However, we found no association between belonging to the local three-generation family category (the largest group) and early retirement. Neither did we find an association with early retirement in the local four-generation family category, in which both the parent and grandchildren generations were present. In contrast, women in the one-generation family

category, with few relatives to care for, tended to retire early.

Further, we found an association between late retirement and belonging to the slow-starter crowded-nest category, containing those who still have co-residing children at the beginning of the period. One interpretation of this could be that these families still have young children and greater economic commitments and therefore tend to stay in working life longer. Or perhaps they see themselves as younger and therefore postpone their retirement.

One of the basic ideas of the life course theory is that it is the stages of the life course rather than age that influence people's decision and actions, and while the women in the local three-generation family have already passed through various stages in the life course at age 55 years, those who belong to the slow-starter crowded-nest category have not. These examples demonstrate the importance of adding a life course perspective and implementing sequence analysis in the study of family networks and of how they might influence life situations and strategic life decisions, such as exiting from working life.

Another strain of thought from life course theory is the idea that events and actions earlier in life constitute restrictions later in life. From this study, it is evident that, for instance, the timing of childbirth affects the life course of the women at a later stage of life as well. It can also be noted that previous migration decisions have shaped the geography of the family landscape in which the women aged 55–70 years find themselves.

As regards introducing a new approach to the analysis of the dynamic family landscape, we realise that this initial attempt has its obvious limitations but it also opens up for further research in the field. An arguable shortcoming of this paper, due to data limitations, is the rather stereotyped traditional picture of families not covering unmarried cohabitants or same-sex couples. This means that we cannot fully reveal the diversity of the dynamic family landscape. Further research would also benefit from including these families as well as other forms of social networks outside the traditional family to have a broader view of how the family life course evolves over time and how these patterns interact with important life decisions and life situations. But although the limits of the register data narrow the possibilities for this kind of

empirical research, they also open up avenues for further research in the field, as does the sequence analysis as a novel method, which in our view has the potential to become a valuable complement to standard statistical analyses as a method that recognises the complexity of family life courses.

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#### NOTES

- (1) In the cohort investigated here, the median retirement age was 64 years, which means retiring in the year 1999; thus, this cohort was virtually unaffected by the Swedish pension reform gradually introduced beginning in 1998, with a stronger incentive to work longer.
- (2) When using this specific definition, available in the official registers, obviously not every child living in Swedish families is registered in the place where they actually live, despite the high quality of the family data. For example, one child may live in the house of the father or grandparents but be registered in the house of the mother.

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