Disentangling age and cohort effects in coresidence with adult children among the elderly in Catalonia*

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Abstract

Cross-sectional studies show an apparent increase in parent-child coresidence with age when mature adult age, and particularly among the elderly. This paper seeks new insights on their living arrangements in the Spanish region of Catalonia by applying Age Period Cohort analysis to census microdata.

Results reveal that the increase in the age at which intergenerational coresidence occurs is mainly related to its lower propensity among younger (i.e. more recent) cohorts during the transition to old ages. Also, the analysis reveals that the impact of widowhood, which has a greater impact among men than among women, decreases among more recent cohorts.

Keywords: Demography, Living arrangements, Elderly, APC Models.

Classification AMC: 91D20

Efectos de edad y de generación en la coresidencia con hijos de las personas mayores en Cataluña

Resumen

Los estudios transversales muestran un aparente aumento de la coresidencia entre padres e hijos con la edad cuando las edades maduras envejecen y, en particular, entre los ancianos. Este artículo busca profundizar en las formas de convivencia de

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los mayores en la región española de Cataluña mediante la aplicación de análisis de Edad Período Cohorte a microdatos censales.

Los resultados revelan que el incremento en la edad a la cual se da la coresidencia intergeneracional está principalmente relacionado su menor propensión entre las cohorte más jóvenes (es decir, más recientes) durante su transición a la vejez. Asimismo, el análisis revela que el impacto de la viudedad, que tiene un mayor impacto entre los hombres, disminuye entre las generaciones más recientes.

Palabras clave: Demografía, Formas de convivencia, Personas mayores, Modelos EPC.

Clasificación AMC: 91D20

1. Introduction

In the last decades, a decline of parent-child coresidence at old age has occurred in most Western regions and, conversely an increase in the number and share of people who live alone. Thus, a considerable body of literature has studied the demographic, social and economic factors associated with changing patterns in living arrangements at older ages. Although the steady decline in parent-child coresidence in all Western countries, its prevalence is still high in Southern European countries. In Spain, 36.3% of males and 46.0% of females aged 65 and above lived with their children in 2010. This proportion is even higher among older ages, reaching 52.4% of people above 80 years old.[1]The larger share of parent-child coresidence observed with age suggests that later after the offspring's nest-leaving, parents may move in together with their children, when the former are in need of support or care at older ages because of events related to the ageing process, such as health decline or widowhood.

While previous studies have mostly concentrated on age as the major time dimension that explains the above mentioned changes in living arrangements, this paper focuses on the birth cohort as a mediator that influences trends in intergenerational coresidence in the transition to old age. Due to regional differences in family systems in Spain, living with children was much more frequent in Catalonia and other Northern regions than in Central and Southern regions of Spain as a result of the historical rule of inheritance of sole heir. The stem family system had also major presence in small villages and rural areas since it was linked to the transfer of the familiar house and land. This paper focuses on Catalonia as a case study to investigate changes in living arrangements in a region with traditional intergenerational coresidence based on the stem family system.

The aim of this study is to contribute to further understanding of the trends in living with children in Catalonia by exploring and estimating age and cohort effects. Parent-child coresidence in the transition to old age is analysed from a cohort perspective. The analysis focuses on cohorts born in the first half of the 20th century (between 1901 and 1950) in

[1] This percentage refers to non-institutionalized population according to the Encuesta de Personas Mayores (2010) IMSERSO.

their transition to old age (50 through 90 years old) aiming at observing whether there are inter-cohort changes, in particular at older ages. It addresses a general question: Is it possible to identify cohort effects in trends of parent-child coresidence in old age? And three more specific questions: 1) to what extent living with children at older ages is due to cohort and/ or to age effects? 2) What is the impact of widowhood in parent-child coresidence? and, 3) Is it changing across cohorts?

The data are drawn from the Spanish censuses conducted in 1981, 1991 and 2001. The lack of retrospective sources that could be representative for Catalonia justify the choice of censuses which, although being cross-sectional sources and having some limitations, are the only source going further back than 1981 that allow observing living arrangements of the same cohorts at different ages.

2. Literature review

The literature has revealed that living arrangements of older people have moved towards more independent models in recent decades. Living alone or with a partner only has become more common than coresidence with children or other kin. This trend has broadly been observed in European countries (Tomassini, 2004) as well as in Spain (Castejón, 2007). Yet, in Spain as in other Southern European countries, living with children is still prevalent among the older elderly (Iacovou, 2000). The general explanation for these disparities highlights both the weakness of welfare systems and the persistence of cultural patterns and ancient family systems which were characterized by strong family ties in Southern Europe (Reher, 1998).

Stressing the influence of historical cultural differences found in the European family systems, it is worthy to note that they are not homogeneous and that regional disparities are observed at the national level as well (Solsona, 1990). In Catalonia, as well as in other regions of Northern Spain, where the inheritance rules were based on the indivisibility of heritage, the stem family system was a deeply-rooted custom. In rural Catalonia from the 17th to the mid-20th century, the family organization and the inheritance law were the mechanisms that ensured the consolidation and continuity of the farm (Maluquer, 1998). The house and lands would pass from heir to heir (usually the eldest son) along generations within a stem family. Likewise, this was a mechanism of social reproduction and of intergenerational solidarity (Ferrer, 2007). Family life was organized around the house, where the heir lived with his wife and children, his parents and unmarried siblings, aunts or uncles.

The economic, political and social changes that took place through the 19th century led to develop new strategies of social mobility, which challenged the cogency of the stem family system. These socioeconomic changes meant the crisis of this traditional model in the 20th century (Ferrer, 2007). Therefore, one may expect that living arrangements associated with the ancient family system would adapt to new social conditions and, consequently, parent-child coresidence will be less prevalent in the 20th century. However, social norms change slowly. As a result of upbringing in traditional context where multigenerational households were very common, cohorts born in the early 1900s may still prefer living with children at older age. As these cohorts moved into later life, they carried with them the social norms and the expectations related to the ancient family system (Hareven, 1994). Therefore, belonging to earlier cohorts may have a positive relationship with coresidence.

On the other hand, social norms of multigenerational living arrangements associated with transfer of the estate and land tenure may still be valid in rural areas and especially within families whose main professional activity is agriculture. Attias-Donfut and Renaut (1994) observed that in France, the multigenerational coresidence was more common in rural areas and in areas where historically the stem family had been established. There, the parent-child coresidence reflects traditional patterns, which seem to weaken for successive cohorts. This is a permanent coresidence (i.e. the coresident children have never left the parental home). By contrast, in urban areas living with children in old age is mainly due to children joining their parents to help them cope with their daily life, often motivated by health problems, widowhood, loneliness or financial hardship of elderly parents. Other studies have highlighted that living arrangements associated with stem family system have evolved and adapted to current social contexts in both rural and urban areas through proximity residence instead of coresidence. These strategies preserve independence and privacy while ensuring intergenerational solidarity and caregiving of elderly parents when needed (Solsona, 1990; Sourdril, 2011).

A fruitful line of research has addressed the study of living arrangements in the elderly focusing on the influence of social, demographic, economic and health factors. The project FELICIE found that, in nine European countries analysed, widowhood and health deterioration are the most determinant factors of residential dependence among elderly aged 75 and over (Festy, 2008). Moreover, being married promotes independent living even in case of ill health. Living together as a couple without children is the most frequent living arrangement among older married persons, even when their health or functional capacity decline (Festy, 2008; Tomassini, 2004), since the spouse stands as the main caregiver. Among the unmarried, it has been shown that health status and functional ability are good predictors of living arrangements among the elderly (Supan, 1988; Worobey, 1990); together with the economic capacity (Bishop, 1986; Mutchler, 1991) and the availability of children or other relatives (Iacovou, 2000; Spitze, 1992; Wolf, 1988; Wolf, 1990).

Literature stressed the connection between living with children and marital status, health status, economic capacity and number of children available. Previous research confirmed that widowhood and health deterioration are crucial events that trigger coresidence at old age (Liang, 2005; Gaymu, 2006; Festy, 2008). From the past, widowhood and the number of children were associated with living with offspring (Elman, 1995; Hareven, 1995). Besides, there is a positive relationship between the number of children and the chances to live with one of them in old age; i.e. the larger number of children available, the more likely to live with one of them in late life (Spitze, 1992; Attias, 1994; Elman, 1995; Hareven, 1995). Higher income or economic capacity enables independent living even after health decline (Bishop 1986; Mutchler, 1991). Regarding health, Zueras and Ajenjo (2010) found that in Catalonia health indicators had lower effects on residential

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dependency than marital status and age. Nevertheless, being dependent for activities of daily life, and in particular for the instrumental activities (IADL), increased the risk of residential dependency. Moreover, IADL had higher impact among men than among women (Zueras, 2010).

Sex and gender roles (with respect to marital status in particular) are two important factors in living arrangements in old age. On the one hand, widowhood has a very different incidence by sex, which makes ageing a different story for men and women; "women grow old alone, but men grow old with a partner" (Delbès, 2006). On the other hand, being widowed may involve different situations for men and women, in particular regarding income, since labour force participation has been higher for men than for women. As a result, elderly women are more likely to perceive a widow's pension, which is much lower than the occupational pension of their partners. By contrast, single women may be more likely to benefit from an occupational pension because they were more likely to be engaged in the labour force. After controlling by socio-demographic and health indicators, widowhood showed a much stronger impact on residential dependency among women with respect to men. This gender-related differential was not found among never maried people (Zueras, 2010).

Finally, it is worth noting that transition and experiences of widowhood have changed through successive cohorts, especially when considering cohorts born in the early 1900s (Hareven, 1995). These cohorts grew up in a "context of high mortality, (…) economic dependence of married women on their husbands, and almost non-existent public welfare measures to support dependent persons" (Hareven, 1995: 273). By that time, the strategies that widows had to develop in order to cope with old age were mostly relying on kin. Most widows lived with their children in late life in a trade-off where they also met their children's needs. Likely these were also the strategies and expectations of young people when they would reach older ages. Hareven observed that, in the United States, the models were changing for more recent cohorts. Since the social and economic context changed, social security expanded and widowhood was postponed to late life, the strategies to deal with widowhood increased and, also, independent living became a possible and preferred alternative.

Most studies on this topic have sought to identify the effect of socio-demographic, economic and health variables on living arrangements at older ages but paid little attention to inter-cohort changes. The scope of this study is expanded to identify age and cohort effects on parent-child coresidence. Moreover, we examine the effect of widowhood on living with children and the evolution of its impact across cohorts. Consideration will be given to some variables whose influence has been emphasized in the literature: sex, marital status and the availability of children. Unfortunately, information on health status and economic capacity are not available in censuses. The latter has been approached indirectly by the elderly's economic situation[2]. This, together with the place of residence, will not be investigated in this article but will be considered as control variables in order

[2] Previously, the educational level was used in the analysis as a proxy of the socioeconomic status. Yet, the economic situation according to activity or inactivity in the labour market and the availability of own economic resources coming from pensions proved to be a more suitable and accurate variable for this analysis.

to standardize and find out the net effect of the predictors of interest, i.e. age, cohort and widowhood.

3. Hypotheses

The general hypothesis is that the higher prevalence of coresidence observed among the oldest old is not only related to the ageing process (age effect) but it has also to do with inter-cohort changes (cohort effects) associated with more independent living arrangements in late life. Also some specific hypotheses were constructed that are summarized below.

Age has a nonlinear effect on parent-child coresidence. In the transition to old age, individuals face several changes; some of them related to the family life course, some others to labour force or to the individual's health status. At younger ages (between ages 50 and 70) children reach adulthood and most of them leave the parental home. Therefore it is expected that coresidence rates decline. At older ages, widowhood and health deterioration can increase the likelihood of coresidence. However, this age effect is expected to be mediated by a cohort effect.

Prevalence of parent-child coresidence is expected to diminish across cohorts as the socialisation in traditional context when multigenerational households were much common weakens. Widowhood is positively associated with parent-child coresidence although its effect is expected to reduce among younger cohorts. Demographic, social and economic changes allowed different coping strategies for widowed. For instance, they increasingly had more possibilities to maintain their independent living, and they might have also changed their expectations and preferences regarding living arrangements.

Finally, fertility is expected to play a role in parent-child coresidence for both sexes. Although only information on children ever born alive was recorded among women (i.e. we ignore the number of children surviving at the age of the interview) we assume that the more living children a woman had, the large the availability of children and the higher the potential number of caregivers in case of need in late life.

4. Data and Methodology

4.1 Data

The analysis is based on microdata from the Spanish censuses conducted in 1981, 1991 and 2001, provided by the Spanish National Institute of Statistics (INE). A 5% sample of the 1991 and 2001 censuses was utilized together with the whole available microdata sample from 1981 (this sample amounts to 25% of the census).

The study focuses on cohorts born between 1901 and 1950 in transition to old age, from 50 to 90 years old. "De jure" population living in private households in Catalonia at the time of the censuses was examined.[3] Individuals born between 1901 and 1950 were selected and joined in ten-year birth cohorts. These cohorts were followed up cohorts through the three censuses and they were compared at the same age intervals.[4] The final dataset includes information on 439,903 individuals.[5] Since we are following different samples of surviving individuals of each group of cohorts, we cannot control the interference phenomena, such as mortality, mobility or institutionalization. Also, since we only observe stocks and we have no control of flows, status changes in both directions from observation to observation could be offset and apparently show that there has been no change. For example, the fact that between two censuses some individuals move in with their children and others stop living with children could reveal no variation on the final proportion of those living with children, which does not mean that no changes have occurred.

4.2 Harmonisation and key variables

In order to make comparison possible, the data were harmonised across censuses. The special features of each census involved some limitations and difficulties of the analysis. The limitations are related to the unequal availability of variables in the censuses and for different populations. In particular, the fact that for the institutionalised population there is no information on marital status in 2001, or on fertility in 1991 has led to constrain the analysis to the population living in private households. For the construction of the living arrangements variable changes in definitions of the residential unit (household) were taken into account as well as differences in the referral system between household members.

In the 1981 census the identification unit was named family. This *concept of family* switched to household in the 1991 census, with very close definitions, and in 2001 the *household concept* was somewhat modified. In 1981 people were organized into families. *Family* was defined as a group of people, generally (but not necessarily) linked because they are relatives, who live together, normally occupying the totality of a dwelling. Persons in domestic services who spend the night in the dwelling and guests who are part of the family group will be included as family. Those who were not a family group were residing in a collective household (institutions). In 1991 the household concept replaced the previous concept of family; their definitions being really close. A *household* was defined as all persons who, living in the same dwelling, shared expenses derived from the use of the dwelling or alimentation. Persons in domestic services and guests were included in the household unit. Whilst the *family* was no longer the identification unit and was specifically defined as the group of people who, coresiding in the same house, were

[3] The institutionalised population was excluded. The share of population living in institutions in Catalonia is pretty small. Although it is larger for women than for men and it increases with age, in 2001 less than 4% lived in institutions by sex and five-year age group between ages 50 and 84. Only women at aged 85-89 exceeded this proportion and reached 8% (see Annex 1).

[4] Details of the sample and the distribution of independent variables are set out in Annex 2.

[5] Since the preliminary results did not vary without considering a number of cases with any missing value in the independent variables of interest, those individuals were removed from the final dataset. Finally 7.3%, 3.5% and 1.2% individuals of 1981, 1991 and 2001 censuses respectively were deleted. Data from the three censuses were put all together and the weights were recalculated in order to preserve the original composition.

linked by kinship ties[6]. In 2001 the concept of *household* was modified: thesharing-expenses requirements were withdrawn[7], and its sole condition was coresidence.

With regards to the referral system between household members, the information improved in the last two censuses compared to the previous one. While the 1991 and 2001 censuses report and identify both partnership and filiation relationships of all members in the household, in 1981 it is only possible to reconstruct this information for the head of household. Therefore, the proportion of parent-child coresidence may be underestimated in 1981. However, this underestimation can only affect 4.9% of the sample in 1981 because most individuals aged 50 and above observed in 1981 (95.1%) are reported in one of these categories: household head or its partner (53.4% and 35.7% respectively), the household head's or its partner's father or mother (4.3%) and child (1.7%).

The dependent variable, parent-child coresidence, is measured as the proportion of people aged 50 to 90 that live with their own children or their partner's children or their children-in-law. To be noted, parent-child coresidence is examined from the perspective of the elderly; i.e. people ages 50-90 living with their adult children.

The independent variables used for the purpose of this analysis are the following: the three dimensions of time (age, period and cohort), sex, marital status, number of ever born children, economic situation and place of residence. Cohorts were grouped into ten-year cohorts (1901-10, 1911-20, 1921-30, 1931-40 and 1941-50) and age into ten-year intervals (51-60, 61-70, 71-80 and 81-90).[8] Marital status reports current status at the time of the census and it is classified into four categories: single, married, widowed, and divorced or separated. Children ever born refers to the number of children born alive to the person and it is only available for ever married women in 1981 and for all women in 1991; there is no information on fertility in the 2001 census.

The economic situation considers four categories based on labour activity. It distinguishes being active and inactive whereby active people are classified as medium-high & high and medium-low & low (qualification), and inactive individuals are categorized into inactive with their own economic resources (i.e. pensions received from retirement, widowhood, disability, etc.) and inactive without own resources. Due to different gender behaviours regarding engagement in labour market among the studied cohorts, women have been considered in a particular way. Married women share their partner's economic situation, except in those cases where the partner's category is lower or worse than their own situation. According to INE's criterion the place of residence was set as: rural (≤2,000 inhabitants), intermediate (2,001-10,000 inhabitants), and urban (>10,000).

[6] Thus, more than one household in 1991 (or family in the 1981 census) could exist in the same dwelling. Yet, given that coresident guests and domestic staff were considered part of the household unit, these cases are rare, for example, households that share housing as a sublet. Among those aged 50 and above, only 0.2% of families in 1981 shared housing with other families, and 0.1% of households in 1991.

[7] This requirement was excluded since the proportion of households that would declare not to share expenses was irrelevant (Vinuesa, 1994).

[8] Because in 1991 age and year of birth were collected in an open-ended group considering 85+, the observation of the birth cohorts 1901-10 at age 81-90 only includes individuals born in 1907-10, who were 81 trough 84 year old in the year of the census.

4.3 Methods

Two methods of analysis were applied, the first one being descriptive and cohort based. Aggregate data were used to explore cohort and age trends in parent-child coresidence, allowing for differences according to marital status and place of residence. In addition, the influence of the number of children on parent-child coresidence was also examined for women in the two periods were fertility information was available. Cohort trends are analysed through the comparison of proportion of parent-child coresidence at the same age intervals. The age effect is examined by observing a given cohort at different ages (i.e. along its transition to old age).

The second method is an Age-Period-Cohort analysis addressed to estimate the effect of each factor separately (age, period and cohort). The Age effects account for changes related, first, to the family life cycle (offspring leaving the parental home) and, later, to the ageing process (widowhood, deterioration of health, etc.). The Period factor refers to circumstantial changes (the economic context, legal changes in pension benefits, number of public facilities and services for the care of the elderly, etc.). The Cohort effects account for inter-cohort changes that could be related to changing values towards individualism and changing social norms regarding intergenerational coresidence, which was traditional and normative in Catalonia in the past. Elder birth cohorts, who have been living in more traditional arrangements in their early lives, may do so when they reach their old age. Besides, better cohort health and/or wealth conditions could also be an important component of cohort factors.

The major problem with APC models is that the three factors are entangled because they are linearly dependent (this is to say, mathematically APC are confounded). The solution to this issue has been studied since the 1970s and its debate continues (Fu, 2008; Fu, 2011; O'Brien, 2011). Since Cohort = Period-Age, there is a problem of identification, which has not a unique solution but several approaches (Holford, 1991; Robertson, 1999; Yang, 2004; Wilmoth, 2006).

Among the number of solutions proposed, this study develops two different approaches: First, Two-factor models of logistic regression were compared to the Three-factor model to choose the one that better fitted the data and that was not significantly different from the APC model (Holford, 1991; Hsu, 2001). In order to standardize the population composition across age and within cohorts, the models include three control variables: marital status, economic situation and place of residence. So as to avoid the problem of having a particular baseline profile, the control variables were included in the deviation method of contrast, i.e. each category of the predictor variable is compared to the overall effect. Although other researchers have highlighted some limitations of this approach[9], my choice was made on the basis of identifying the major factors explaining parent-child coresidence rather than strictly measuring its net effect; and also with the purpose of

[9] The main caveats involved in this approach are that: (1) "a regression model that takes these factors as covariates in APC analysis, suffers from an identifiability problem with multiple estimators" (Fu, 2008); and (2) "the results of an APC analysis reflect both the underlying patterns in the data and the assumptions adopted by the analyst" (Wilmoth, 2006).

easily summarize the effect of another predictor, i.e. marital status, even controlling for other covariates.

Second, with the purpose to have extended criteria to choose the better two-factor model, a test of curvature was performed by subtracting the estimated parameters in the previous models from the fitted regression line. The remaining curvature is the residual from removing the overall linear trend from the estimates. Some constraints on the parameters must be made to obtain a solution; however, the curvature is independent from these constraints (Holford, 1991). The results from the test of curvature cannot be interpreted as relative risks but they only provide information about changes in the linear trend of each time factor. In this analysis, four parameters were equalled to zero: $\beta a_{51\text{-}60} = \beta p_{2001} = \beta c_{1931\text{-}40} = \beta c_{1941\text{-}50} = 0$. The estimated parameters were those obtained by the three-factor logistic regression.[10]

These two different approaches to the APC problem were used to choose the best two-factor logistic regression model, which was the Age-Cohort model. Afterwards, the AC two-factor logistic regression was used to examine the impact of widowhood on parent-child coresidence and whether its effect varies across cohorts.

5. Results

5.1 Cohort analysis

From the cross section to the cohort perspective

Figure 1 displays the proportion of parent-child coresidence against age by sex in two perspectives: the cross-sectional and the cohort analysis. The patterns of parent-child coresidence in the transition to old age from a cross-sectional perspective show a U-shaped curve whose vertex shifts down and to the right from 1981 to 2001. These curves show the effect of age and family life cycle. As a result of children leaving the parental home, parent-child coresidence declines at age 50 through 70. Its share grows again at older age, reaching different intensity by sex and period. Likewise, as age increases, so do the probabilities of deteriorating health and becoming widowed, the latter being much higher for women. In addition, for each subsequent period, the upward trend in age is postponed and parent-child coresidence reaches lower values, yet the rising trend at older ages persists over time. Following the cross-sectional approach, this age pattern may suggest that the highest proportion of parent-child coresidence at older ages is due to intergenerational solidarity: elderly persons and adult children moving in together in order to better cope with daily life. On the other hand, the postponement of the turning point of the curve in subsequent censuses could be explained by a higher life expectancy free of disability and greater availability of facilities to support the elderly as certainly

[10] Previously, other test of curvature were made using Solver from Microsoft Excel to fit the estimates of only the three factors (age, period and cohort) using five-year intervals for age and cohorts and the three periods. These results are not shown but they revealed the same shapes for age, period and cohort that are shown above, which also support the final choice.

has happened between 1981 and 2001. However, this cross-sectional analysis does not permit to ascertain what is going on among cohorts over time.

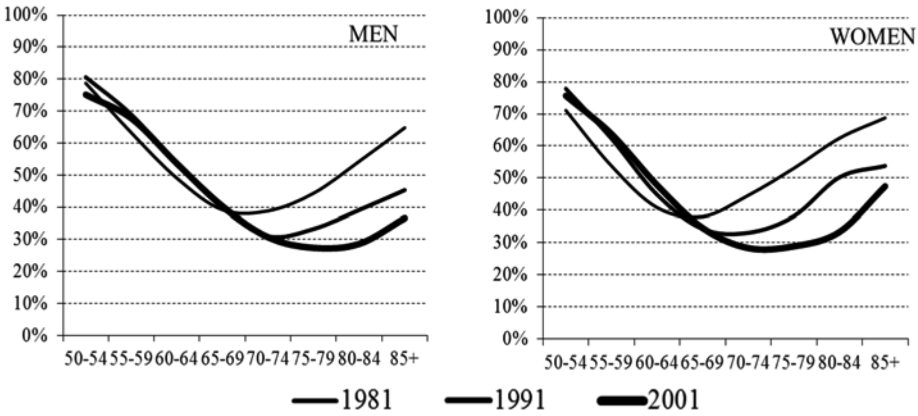
The cohort perspective also evidences an age-related pattern of coresidence that has to do with the life cycle of the family. The decline in living with children is somewhat delayed for men, who are on average 2 years older than the women they marry. It is also slightly postponed for younger cohorts (1931-40 and 1941-50), more among women than among men. These differences could be explained either by a delay in leaving the parental home or a postponement in fertility of these females, and finally by the combined effect of both behaviours. Around age 71-80 the decline stops and the proportions of children living with cohorts remain stable among men. Among women there is a small increase at older ages for the two earlier cohorts (1901-1910 and 1911-1920). At older ages, the prevalence of parent-child coresidence is 10 percentage points higher among women than among men.

Therefore, the cohort perspective offers a new dimension to the study of the evolution of living arrangements of the elderly. The observed increase in coresidence with children in old age that exhibits a U-shaped curve in the cross-sectional approach disappears when the cohort perspective is applied. Besides, it reveals that living with children was significantly more frequent for cohorts born in 1901-10 than for the subsequent cohorts (1911-20) at the same age intervals.

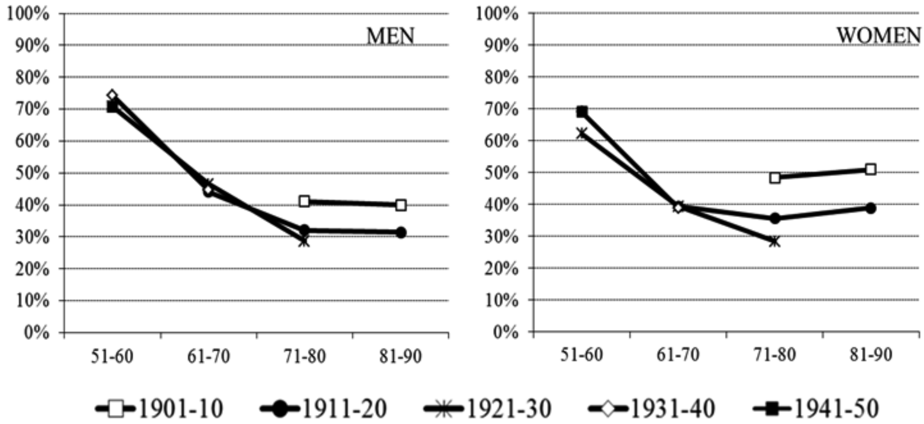
Figure 1.

Proportion of parent-child coresidence by sex and age.

Cross-sectional perspective



Cohort perspective



The impact of marital status on parent-child coresidence

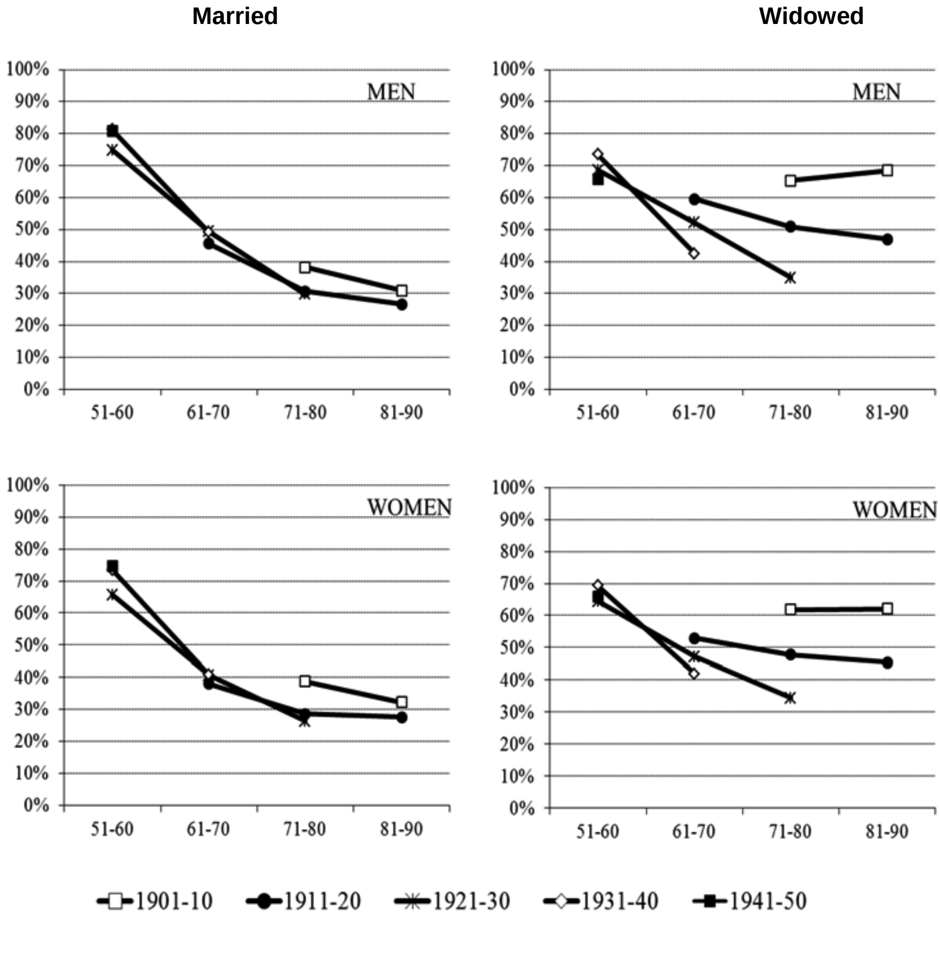
Living arrangements at old ages are strongly shaped by two circumstances linked to the family life course and age: children leaving the parental home and widowhood. Both are crucial events that determine the conformation of the household. Figure 2 shows the great impact that widowhood has on coresidence at older ages.

Sex disparities previously observed in parent-child coresidence seem to be due to differences in marital status. Higher mortality of men and the fact that they usually marry women younger than them involve higher proportion of widowed among women. However, once controlling by marital status (married and widowed), sex disparities become small, and some trends change. Coresidence is slightly higher among men for the eldest cohorts. At older ages widowed people live with children in much higher proportion than those married. For instance, for cohorts born in 1901-10 and 1911-20, differences between married and widowed are above 20 percentage points at age groups 71-80 and 81-90. Nevertheless, while widowhood seems to be a differentiating factor in parent-child coresidence for early birth cohorts the disparities between married and widowed at age 71-80 are very small for the middle cohorts (1921-30). Although there are few inter-cohort changes among the married elderly, the prevalence of coresidence is still slightly higher for the older cohorts than for their younger counterparts.

Contrary to what the cross-sectional view shows, the cohort approach reveals that for both married and widowed people the proportion of parent-child coresidence declines with age for all but the earliest cohort of males. The fact that coresidence is more frequent among the eldest cohorts of widowers than among widows could be due to a gender issue: the perception that a man would not be able to develop his daily life without a spouse. Even if widowhood is strongly related to parent-child coresidence, assuming constant marital status over age, in the aggregate we do not observe an increase of coresidence over age. The higher prevalence and the decreasing trend among widowed could be explained because widowhood at earlier ages could delay or even avoid the nest-leaving of all children and encourage one of them to stay at home with the lonely parent after the loss of the spouse. However, widowhood at older ages appears to be associated with coresidence once one considers changes in age interval and from being married to becoming widowed. For instance, among women born in 1901-10, 40% of married women lived with children at ages 71-80, whilst the percentage rises up to 60% of widows at age 81-90. These hypotheses could not be tested because there was no available information about duration either age at widowhood.

Figure 2

Parent-child coresidence by marital status, sex, cohort and age.



The availability of children

Obviously, the opportunity to live with children depends on children availability. Although the dependent variable includes partner's children and children-in-law, fertility should be considered. Unfortunately, as mentioned above, information on fertility was only recorded for women in 1981 and 1991 with some limitations. In 1981, only ever married women were asked about the number of children born alive to them. In 1991 all women living in private households were asked the same question.

It appeared that coresidence was less important among married than among widowed elderly. In the same direction, lack of partner could also be observed among single and divorced people. As most single people do not have available children to live with, we examined these trends controlling by fertility. Figure 3 displays the proportion of parent-child coresidence among women who have had children, controlling by marital status. Since there were few cases of single mothers and divorced women, particularly among the elder cohorts, the 95% confidence interval was calculated. The confidence interval becomes larger at older ages for single and divorced mothers. There is only one observation for single mothers (1991 census); hence, no trend can be seen. However, as far as we can compare, the observed proportions are not much different from those of widows. On the other hand, divorced mothers show an increase of coresidence with age. Yet, the confidence interval enlarges with age and no conclusions can be made on this apparent trend.

Since the results for widows in Figure 3 are consistent and parent-child coresidence is strongly associated with widowhood, is worthy of attention to examine the effect of the number of children (ever born alive to the person) on parent-child coresidence among widowed women (Figure 4).

A positive relationship between the number of children and parent-child coresidence was expected; i.e. the more children ever born, the more likely to live with at least one of them. Since there is no information about surviving offspring, the more children a woman had, the more likely is that at least one of them had survive, had not migrate and was available to live with. The expected association was only partially found. On the one hand, women who have had 3 or more children are more likely to live with them than women who have had only 2. This is more evident at earlier ages, and it could be due to younger children who have not left home yet. However, also at older ages the prevalence of coresidence among women who had 3+ children is somewhat higher than those who gave birth to 2 children. On the other hand, surprisingly those women who have had just 1 child show a very different coresidence pattern: living with children increases with age, which suggests old women and their adult child moving in together. Moreover, this pattern appears stable through cohorts.[11] Unfortunately, the lack of fertility information in the 2001 census did not allow seeing whether this pattern persisted among younger cohorts.

These results suggest a distinct pattern for widowed women who have had 1 child. One may think that being an only child eliminates negotiation among potential siblings regarding care for elderly parents, inheritance and estate management. Further, in those cases, coresidence could be seen as a duty for the only child, whereas there could be an effect of diffusion of responsibilities when more siblings are available. On the contrary, coresidence trends of women with 2 or 3+ children are quite similar and show a decline of coresidence across age. Once again, large disparities are found between the earliest cohort (1901-1910) and cohorts born in 1911-20.

[11] Since having just 1 child was not a very common behaviour among these cohorts, the 95% confidence interval was calculated for women having had just 1 born-alive child.

Figure 3

Proportion of parent-child coresidence among women who have had children by cohort, marital status and age. 95% Confidence interval (x).

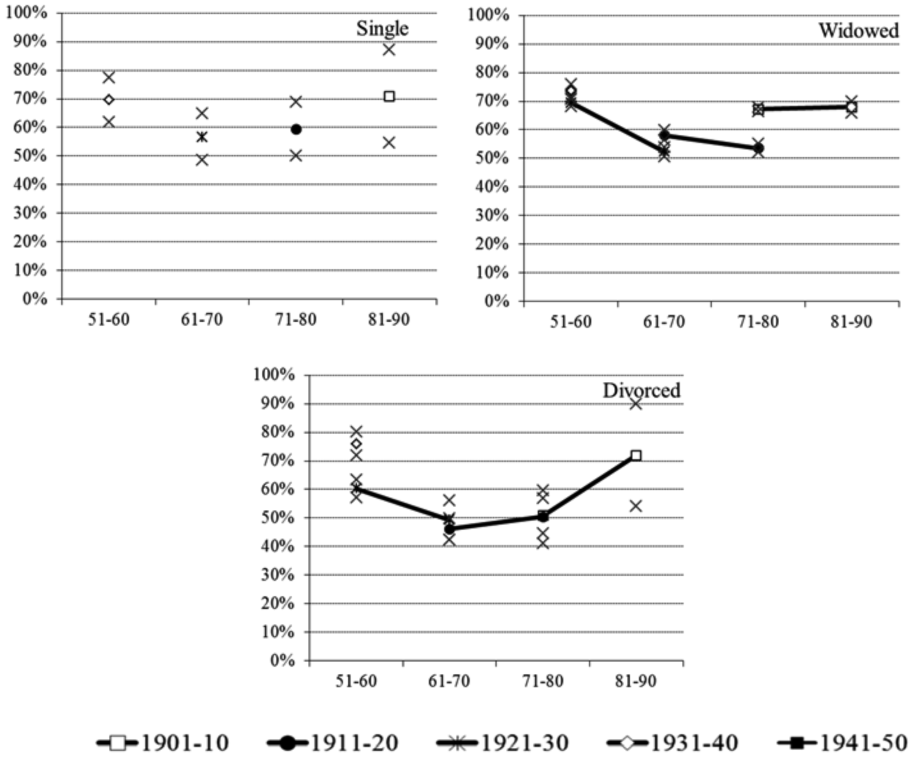
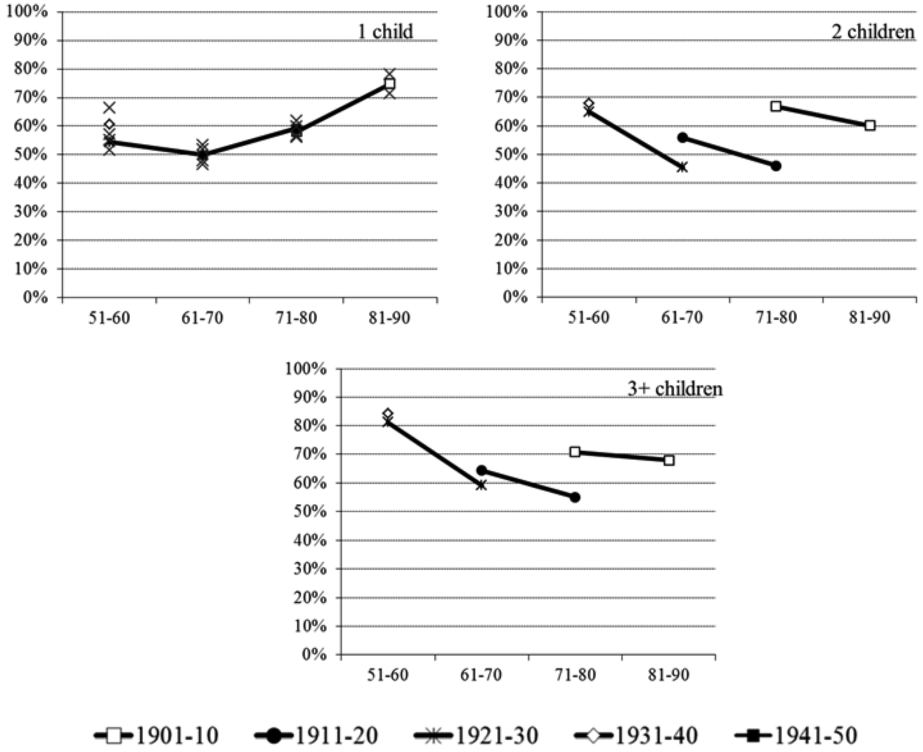


Figure 4

Proportion of widowed women living with children by cohort, age and number of children born alive. 95% Confidence interval (x).

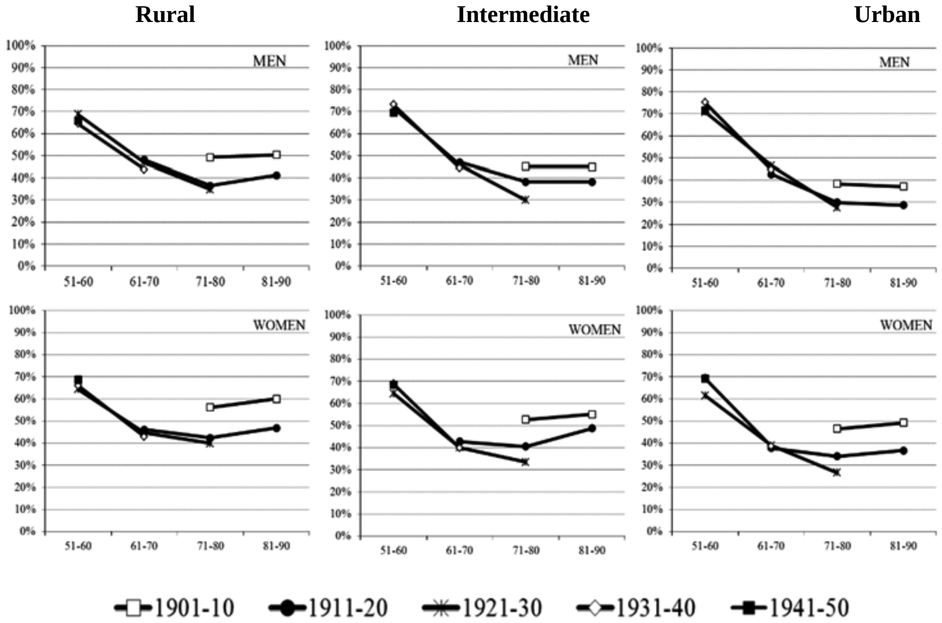


Is intergenerational coresidence still more common in rural areas?

For all cohorts, beyond age 70 living with children is more common in rural as well as in intermediate areas compared to urban areas, especially for the eldest cohorts (Figure 5). The share of coresidence seems to be decreasing for younger cohorts. In all areas there is a gap of around 10 percentage points between cohorts born in 1901-10 and in 1911-20. However, we should consider that different composition of population on marital status through living areas could distort these results.

Figure 5

Parent-child coresidence by living area, sex, cohort and age.



To capture the net effect of inter-cohort changes it is necessary to introduce all the variables in a model, which will allow to control by the population composition regarding marital status, economic situation and living areas.

5.2 APC models

Disentangling age, period and cohort effects in parent-child coresidence

Table 1 displays the APC regression used in the attempt to disentangle Age (A), Period (P) and Cohorts (C) effects. First, two-factor models of logistic regression (AP, AC and PC) were compared to the Three-factor model (APC) to choose the two-factor model that better explains the data assuming that one of the tree factors can be omitted (Table 1). Second, a test of curvature was performed (Figure 6). Its shape displays the moments in time when the trend experiences big variations, i.e. it reveals patterns of change over age, period and cohorts. The models that most differ from the curvatures obtained from the three-factor model are those containing the period factor (Figure 6). On the other hand, the residual curvature from the Age-Cohort model is the closest to the one of the three-factor model. According to both methods, the Age-Cohort model (AC) is the two-factor model that better explains the data[12]. Therefore, for the purpose of this analysis the period effect could be omitted and the Odds Ratio of the Age-Cohort model can be interpreted to measure the effect of age and cohort in parent-child coresidence (Table 1, columns 3 and 7).

The more important result in Table 1 is that, controlling for marital status, economic situation and place of residence, the odds that a man or a woman would live with children decrease with age. Cohort effects are U-shaped, i.e. the odds that a man or a woman would live with children substantially decrease from the eldest cohort (1901-10) to intermediate cohorts, who have lower odds than the two more recent cohorts. Among men, only cohorts born in 1901-10 have remarkably higher odds (38% higher) of living with children than the reference cohorts, the most recent cohorts, born in 1941-50. Women born in 1901-10 have twice risk of living with children than more recent cohorts. Whereas the risk for cohorts born in 1921-30 is 12% and 13% lower than for the reference cohorts among men and women respectively.

Finally, I shall briefly comment the coefficients of the control variables considered: economic situation and place of residence. These two variables were expected to influence parent-child coresidence and were included in the model as control variables to standardize the population across ages and within cohort groups. Being active and having medium-high labour profile contributes to the likelihood of living with children, whereas the less prone to intergenerational coresidence are those inactive with own resources. On the other hand, the effect of the place of residence confirms what was anticipated. The odds of living with children are 21% and 27% higher in rural than in urban areas for men and women respectively.

[12] The choice was based on the following criteria: (1) The PC model was rejected since its pseudo R square is the lowest and, most particularly because the Odds Ratio (OR) differ substantially from the APC model as a result of the strongest impact of age. The AP model was refused because the OR differ more from the APC model regarding its magnitude. Therefore, AC is the two-factor model with highest pseudo R square, i.e. it better fits the data, and its estimates do not significantly differ from the ones of the APC model. (2) The period deviation from the linear trend in the curvature test is very small; while the curvatures of Age and Cohort obtained from the estimates of the AC model completely capture their drift, since they are almost equivalent to the ones from the APC model. From the results of both approaches, Period appears to be the least important factor in explaining trends in living with children.

Table 1

APC two-factor models: Odds Ratio of Living with children (Continue)

	Males			
	AP	*AC*	*PC*	*APC*
Period				
1981	1.017		4.159*	0.987
1991	1.103*		2.339*	1.110*
2001	1		1	1
Age				
51-60	4.747*	5.130*		5.510*
61-70	1.642*	1.857*		1.962*
71-80	1.183*	1.078		1.114*
81-90	1	1		1
Cohort				
1901-10		1.378*	0.077*	1.443*
1911-20		0.858*	0.082*	0.874
1921-30		0.886*	0.193*	0.882*
1931-40		1.038	0.417*	redund
1941-50		1	1	1
Marital Status				
single	0.195 *	0.196*	0.197*	0.488*
married	2.405 *	2.444*	2.388*	0.195*
widowed	4.272 *	4.278*	4.399*	2.445*
divorced	0.500 *	0.488*	0.483*	0.488*
Economic situation				
Medium-high & high	1.306 *	1.309*	1.335*	1.306*
Medium-low & low	1.109 *	1.128*	1.173*	1.126*
Inactive with Res.	0.732 *	0.728*	0.684*	0.726*
Inact. without Res.	0.943 *	0.931*	0.933*	0.937*
Living area				
Rural	1.101 *	1.100*	1.099*	1.101*
Intermediate	1.002	1.004	1.004	1.002
Urban	0.907 *	0.906*	0.906*	0.906*
Constant	0.272 *	0.272*	1.401*	0.253*
-2 Log likelihood	237,954	237,355	238,095.5	237,286
Chi-square	37,105	37,703.5	36,963.4	37,773.2
Pseudo R^2	0.135	0.137	0.134	0.137
df	13	15	14	16

Significance: * p<0.01

Table 1

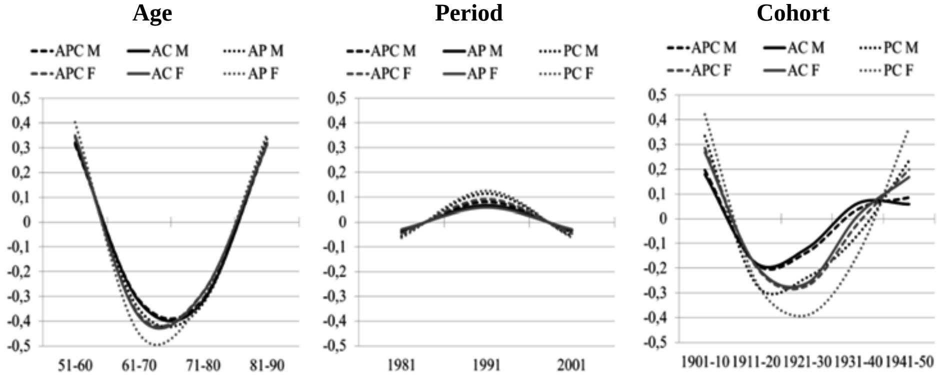
APC two-factor models: Odds Ratio of Living with children (Conclusion)

	Females			
	AP	*AC*	*PC*	*APC*
Period				
1981	1.296*		3.260*	0.849*
1991	1.298*		2.258*	1.111*
2001	1		1	1
Age				
51-60	2.327*	3.818*		5.220*
61-70	0.909*	1.343*		1.678*
71-80	0.935*	0.950		1.057
81-90	1	1		1
Cohort				
1901-10		2.029*	0.173*	2.911*
1911-20		1.078*	0.134*	1.370*
1921-30		0.873*	0.234*	1.004*
1931-40		1.002	0.407*	redund
1941-50		1	1	
Marital Status				
single	0.220*	0.226*	0.227*	0.225*
married	1.430*	1.461*	1.433*	1.460*
widowed	2.478*	2.485*	2.547*	2.490*
divorced	1.279*	1.221*	1.207*	1.220*
Economic situation				
Medium-high & high	1.252*	1.233*	1.288*	1.227*
Medium-low & low	1.043*	1.065*	1.136*	1.063*
Inactive with Res.	0.668*	0.683*	0.631*	0.676*
Inact. without Res.	1.146*	1.115*	1.083*	1.134*
Living area				
Rural	1.120*	1.121*	1.121*	1.122*
Intermediate	1.011	1.012	1.011	1.011
Urban	0.883*	0.882*	0.882*	0.882*
Constant	0.542*	0.432*	1.639*	0.316*
-2 Log likelihood	300,582	298,991	300,735	298,747
Chi-square	32,016.1	33,607.5	31,863.4	33,851.2
Pseudo R^2	0.104	0.109	0.097	0.109
df	13	15	14	16

Significance: * p<0.01

Figure 6

Test of curvature: Age, Period and Cohort.



Estimating the net effect of widowhood on parent-child coresidence

Finally, in order to examine the effect of widowhood on parent-child coresidence at old age, again a two-factor logistic regression omitting the Period factor is performed. The population under analysis are married and widowed persons. Likewise, different models for men and women were run and economic situation and place of residence were included as control variables. In Model 1 age and cohort effects were considered, in Model 2 the effect of marital status was added, and Model 3 incorporated the interaction between marital status and cohort (Table 2).

The results of age and cohort (in Table 2, col. 2) slightly vary from those shown in Table 1. Once never married and divorced population are excluded, there are few changes on the estimates. First, among men cohort trends are the same: the largest difference between cohorts is for the earliest cohort (1901-10) compared to the other groups of cohorts and cohorts born in 1911-20 and 1921-30 have slightly lower odds than more recent cohorts. These trends do not significantly change once the marital status is included (col. 3). After controlling for age, birth cohort, economic situation and place of residence, widowers have 76% higher probability of living with children than married men.

Second, among women (Table 2, cols. 5 and 6) results for age vary from Table 1: the odds that a woman would live with children slow down with age, except for women between age 71-80 and 81-90 where a small increase by age is confirmed (15 percentage points). After controlling for marital status, differences for younger ages compared to older ages increase due to uneven distribution of married and widowed women by age intervals. The effect of widowhood is somewhat lower for women than for men. On the overall, widows have 70% higher risk than married women to live with children. Nevertheless, the effect of widowhood appears to be changing for different cohorts (Model 3, cols. 4 and 7); these results will be commented below. Model 3 also shows that, once considered the varying effect of marital status across cohorts, the U-shaped trend of age among women disappears. Thus, the odds of parent-child coresidence decrease with age both for men and women. We could say that the observed increase in living with children among older women (from age 71-80 to 81-90) is partly due to the highest incidence of widowhood among women and partly due to the strongest influence of widowhood for elder cohorts.

Results of Model 3 are summarized in Table 3. The comparison of the calculated odds ratio of living with children for each group of cohorts separately for married and widowed men and women informs about how much the effect of widowhood changes across cohorts. According to Table 3, the effect of widowhood decreases across cohorts for both sexes. The impact of widowhood was stronger for the eldest cohorts and, also, more important among men than among women. For instance, among cohorts born in 1901-10, the odds that a widower would live with children are 3.3 larger than the odds of being a married man. Whereas among women of the same cohorts, being widowed increased by 2.7 the likelihood of parent-child coresidence compared to married women. The impact of widowhood decreases for subsequent cohorts and there is almost no effect for the intermediate cohorts (1921-30).

Table 2

Odds Ratio of Living with children. Married and widowed population.

	Males			*Females*		
	M1	*M2*	*M3*	*M1*	*M2*	*M3*
Cohort						
1901-10	1.226*	1.185*	0.979	2.060*	1.903*	1.217*
1911-20	0.760*	0.747*	0.695*	1.044	0.995	0.796*
1921-30	0.766*	0.763*	0.753*	0.806*	0.799*	0.761*
1931-40	0.958	0.956	0.947	0.954	0.962	0.928*
1941-50	1	1	1	1	1	1
Age						
51-60	4.430*	5.030*	5.124*	2.936*	3.739*	3.850*
61-70	1.618*	1.824*	1.908*	1.072*	1.33*	1.438*
71-80	0.995	1.076	1.142*	0.853*	0.952*	1.030
81-90	1	1	1	1	1	1
Marital status						
Married		1	1		1	1
Widowed		1.766*	0.506*		1.704*	0.861*
Widowed*Cohort						
W * 1901-10			6.459*			3.113*
W * 1911-20			4.092*			2.371*
W * 1921-30			1.973*			1.506*
W * 1931-40			1.457*			1.270*
Economic situation						
Medium-high & high	1.300*	1.311*	1.306*	1.175*	1.247*	1.226*
Medium-low & low	1.126*	1.132*	1.131*	1.019*	1.073*	1.063*
Inactive with Resour.	0.734*	0.725*	0.728*	0.719*	0.679*	0.706*
Inact. without Resourc.	0.932*	0.929*	0.931*	1.163*	1.102*	1.086*
Living area						
Rural	1.120*	1.119*	1.121*	1.119*	1.135*	1.140*
Intermediate	0.997	0.998	0.996	1.011	1.012	1.009
Urban	0.896*	0.896*	0.896*	0.884*	0.870*	0.869*
Constant	0.888*	0.771*	0.779*	0.936*	0.692*	0.728*
-2 Log likelihood	223,178	222,341	221,544	277,379	275,105	274,173
Chi-square	24,559	25,396	26,193	17,334	19,608	20,539
Pseudo R^2	0.099	0.103	0.106	0.059	0.067	0.070
df	12	13	17	12	13	17

Significance: * p<0.01

Table 3

Odds ratio of Living with children, after controlling by the interaction between marital status and cohort.

Cohort	*Males*			*Females*		
	OR Married	*OR Widowed*	*OR W / OR M*	*OR Married*	*OR Widowed*	*OR W / OR M*
1901-10	0.979	3.200	3.3	1.217	3.262	2.7
1911-20	0.695	1.439	2.1	0.796	1.625	2.0
1921-30	0.753	0.752	1.0	0.761	0.987	1.3
1931-40	0.947	0.698	0.7	0.928	1.015	1.1
1941-50	1.000	0.506	0.5	1.000	0.861	0.9

6. Conclusions and Discussion

This work has studied trends in intergenerational coresidence in the transition to old age from a cohort perspective paying special attention to the effect of widowhood, and seeking for new insights into understanding trends evolution with age, across cohorts and over time. The cohort analysis has helped distinguish age and cohort trends of parent-child coresidence among elderly adults. However, when examining age and cohort effects, one needs to pay attention to the confounded effect of period. Two different approaches to the APC problem were performed: two-factor logistic regression and the test of curvature.

In disentangling age, period and cohort effects, finally two-factor models including age and cohort were used to analyse parent-child coresidence. The main findings are that both age and birth cohorts explain trends in parent-child coresidence in the transition to old age. Briefly, the age pattern reveals that parent-child coresidence declines across age among men, while it slightly increases at older ages among women, showing a U-shaped trend. At old ages, women live with children in higher proportion than men. Nevertheless, once controlled for marital status, sex differences diminish. Further, this observed rise in coresidence at older ages disappeared when the interaction between marital status and cohort was introduced. Therefore, the increasing trend in coresidence among women at older ages would be due to the impact of widowhood in two complementary points: first, the major incidence of widowhood among women and, second, its stronger influence among elder than among subsequent cohorts of widowed women.

Another objective of this study was to examine the effect of widowhood on parent-child coresidence and the evolution of its impact across cohorts. Widowhood at older ages is strongly related to coresidence. Compared to those married, widowers have 76% higher risk of living with children and widows 70%. This suggests that the loss of the partner is a triggering factor leading up to live with children; either because of avoiding the nest-leaving of one of the children, or as a result of a later decision of moving in together. This effect is more evident for elder cohorts than for their younger counter parts. The impact of widowhood has been a very differentiating factor promoting coresidence for cohorts born in 1901-10 and 1911-20, yet it has been declining across cohorts, regardless of economic situation and place of residence. Gender differences also appeared when examining the effect of widowhood on coresidence. Although widowhood incidence is smaller among men, the effect of losing their wife has higher impact on coresidence than the loss of her husband for a woman. This suggests different behaviours related to gender roles. It could be that the perception of both children and the widowed father was that he would not be able to properly manage in his daily life without his wife, who most likely had been devoted to housework.

Regarding inter-cohort changes, the cohort analysis uncovered that whatever the variable considered, there were always inter-cohort differences in coresidence at least between the eldest and subsequent cohorts. This result supports the main hypothesis that, besides the ageing process, also inter-cohort changes can partly explain the higher prevalence of parent-child coresidence observed at older ages. When all the variables were considered in the models, the results verified that earlier cohorts, and especially the eldest cohorts (born in 1901-10), are more likely to live with offspring than more recent cohorts. Some of these inter-cohort changes can be related to improved circumstances in the ageing process, such as better health and wealth conditions, higher life expectancy which, consequently, delays transition to widowhood, and also traditional cultural patterns that are disappearing.

Other interesting findings were related to the influence of fertility. The availability of children was considered for widowed women to examine the influence of the number of children on coresidence. Widows showed dissimilar patterns depending on the number of children ever born to them. Those women who have had only one child exhibited a stable pattern across cohorts and parent-child coresidence increasing with age. It was not possible to confirm whether this age pattern remains stable for more recent cohorts because fertility information is not available in the 2001 census. This trend suggests widowed mothers and their child moving in together in late life. This could be due to a stronger sense of responsibility or duty of the only children not to leave their mother alone, as well as to greater expectation of the mother of this happening. On the other hand, it could owe to more pragmatic issues based on a trade-off, since having no siblings eliminates potential negotiation regarding care for the elderly parents as well as access to inheritance.

Many factors may contribute to the decline of parent-child coresidence. This study highlighted the importance of age and cohort factors as well as the effect of widowhood, and its declining impact across cohorts. Parent-child coresidence is still common in Catalonia, since around 30% of men and women ages 71-80 and 81-90 live with their children. However, it is expected to decline due to improvements in health and mortality, therefore delaying transition to widowhood. Also ideational changes and the spread of individualisation within younger cohorts could be shifting from traditional patterns to more independent living arrangements. Therefore, cohorts' replacement is expected to reduce the share of elderly living with children in Catalonia.

The observed changes seem to have occurred because cohorts who are reaching old age at the early 21st century were willing, ready and able to maintain their residential independence up to older ages even if the alternative was living alone. However, after the economic crisis undergone in last years, will the elderly be able to live independently? Will there be a reversed trend in coresidence due to financial hardship of both parents and adult children?

Annexes

Annex 1

Proportion of institutionalised population by sex and age group in Catalonia. 2001 census.

Age group	*Male*	*Female*
50-54	0.31	0.25
55-59	0.31	0.39
60-64	0.41	0.54
65-69	0.59	0.78
70-74	0.85	1.27
75-79	1.28	2.26
80-84	2.18	4.51
85-89	3.97	7.92

Annex2

Distribution of independent variables. Column percentage. (Continue)

	1901-10		1911-20			1921-30		
	1981	1991	1981	1991	2001	1981	1991	2001
	51.834	5.198	80.052	18.398	9.320	118.019	31.165	24.461
	71-80	81-90	61-70	71-80	81-90	51-60	61-70	71-80
Sex								
Male	39.8	36.8	44.0	40.5	33.2	48.7	46.6	42.6
Female	60.2	63.2	56.0	59.5	66.8	51.3	53.4	57.4
Marital Status								
Never married	8.9	7.8	8.9	7.9	6.8	8.4	7.1	6.6
Married	49.0	37.2	70.3	57.7	34.0	83.3	76.8	61.1
Widowed	41.1	54.2	19.3	33.3	58.5	6.8	14.8	30.8
Separated	1.0	0.7	1.5	0.9	0.5	1.6	0.9	1.0
Divorced	0.0	0.1	0.0	0.2	0.3	0.0	0.4	0.4
Economic situation								
Medium-high & high	1.4	0.2	8.9	0.6	0.7	21.3	8.2	1.0
Medium-low & low	1.4	0.4	18.7	0.9	2.5	55.7	15.3	1.8
Inactive with Resources	87.4	90.9	63.2	93.1	87.6	14.2	71.8	84.0
Inactive without Resources	9.9	8.4	9.2	5.4	9.2	8.8	4.8	13.2
Place of residence								
Rural	12.7	10.1	11.8	9.2	9.2	11.0	8.7	8.4
Intermediate	12.4	14.2	12.2	14.1	12.9	12.4	13.3	13.6
Urban	74.9	75.6	76.0	76.7	78.0	76.6	78.0	78.0
Fertility (Ever married W)								
Childless	7.6	13.0	9.1	13.1		7.8	10.5	
1 or more children	92.4	87.0	90.9	86.9		92.2	89.5	
1 child	16.3	25.9	19.7	23.1		19.4	20.4	
2 children	36.3	25.7	34.1	27.0		34.9	31.8	
3 children	15.2	14.9	15.3	16.1		17.6	17.3	
4+ children	24.5	20.5	21.8	20.6		20.3	19.9	

Annex2

Distribution of independent variables. Column percentage.

(Conclusion)

	1931-40		1941-50
	1991	2001	2001
	33.551	30.966	36.939
	51-60	61-70	51-60
Sex			
Male	49.2	47.8	49.2
Female	50.8	52.2	50.8
Marital Status			
Never married	7.0	6.5	7.5
Married	85.0	76.7	80.4
Widowed	5.7	13.4	5.4
Separated	1.6	2.0	3.7
Divorced	0.8	1.3	3.0
Economic situation			
Medium-high & high	23.9	7.5	30.1
Medium-low & low	52.6	9.1	40.7
Inactive with Resources	17.8	62.6	12.0
Inactive without Resources	5.7	20.9	17.3
Place of residence			
Rural	6.5	6.6	6.1
Intermediate	12.9	13.8	13.3
Urban	80.7	79.6	80.6
Fertility (Ever married W)			
Childless	7.2		
1 or more children	92.8		
1 child	14.9		
2 children	36.2		
3 children	22.2		
4+ children	19.5		

References

ATTIAS-DONFUT, C., & RENAUT, S., (1994) «Vieillir avec ses enfants», *Communications*, 59(1), 29-53.

BISHOP, C., (1986) «Living arrangement choices of elderly singles: Effects of income and disability». *Health Care Financ Rev*, 7(3), 65-73.

BORSCH-SUPAN, A., KOTLIKOFF, L. J., & N. MORRIS, J. (1988).The dynamics of living arrangements of the elderly. *National Bureau of Economic Research, NBER* Working Paper No. W2787.

CASTEJÓN, P., & SANCHO, M., (2007) «Modelos de convivencia». In Ministerio de Trabajo y Asuntos Sociales (Ed.), «A propósito de las condiciones de vida de las personas mayores. Encuesta 2006». Madrid: IMSERSO.

DELBÈS, C., GAYMU, J., & SPRINGER, S., (2006) «Les femmes vieillissent seules, les hommes vieillissent à deux. Un bilan européen», *Population Et Sociètès*, 1, 419.

ELMAN, C., & UHLENBERG, P., (1995) «Co-residence in the early twentieth century: Elderly women in the United States and their children», *Population Studies*, 49(3), 501-517.

FERRER I ALÒS, L., (2007) «Hereus, pubilles i cabalers: El sistema d'hereu a Catalunya» Catarroja etc.: Afers.

FESTY, P., & RYCHTARIKOVA, J., (2008), «Living conditions for the elderly in the late twentieth century». In J. Gaymu, P. Festy, M. Poulain & G. ( ). Beets (Eds.), «Future elderly living conditions in Europe» (pp. 41-70). Paris: INED.

FU, W. J., (2008) «A smoothing cohort model in age–period–cohort analysis with applications to homicide arrest rates and lung cancer mortality rates», *Sociological Methods & Research*, 36(3), 327-361.

FU, W. J., LAND, K. C., & YANG, Y., (2011) «On the intrinsic estimator and constrained estimators in age-period-cohort models», *Sociological Methods & Research*, 40(3), 453-466.

GAYMU, J., DELBÉS, C., SPRINGER, S., BINET, A., DESESQUELLES, A., KALOGIROU, S., ET AL., (2006) «Determinants of the living arrangements of older people in Europe», *European Journal of Population*, 22(3), 241-262.

HAREVEN, T. K., (1994) «Aging and generational relations: A historical and life course perspective», *Annual Review of Sociology*, 20, 437-461.

HAREVEN, T. K., & UHLENBERG, P., (1995) «Transition to widowhood and family support systems in the twentieth century, northeastern United States». In P. Laslett, & D. I. Kertzer (Eds.), «Aging in the past: Demography, society, and old age» (pp. 273-299). Berkeley: University of California Press.

HOLFORD, T. R., (1991) «Understanding the effects of age, period, and cohort on incidence and mortality rates», *Annual Review of Public Health*, 12(1), 425-457.

HSU, H. C., LEW-TING, C. Y., & WU, S. C., (2001) «Age, period, and cohort effects on the attitude toward supporting parents in Taiwan», *The Gerontologist*, 41(6), 742-750.

IACOVOU, M., (2000) «Health, wealth and progeny: Explaining the living arrangements of older European women», *Institute for Social and Economic Research Essex University*, (Paper 8)

LIANG, J., BROWN, J. W., KRAUSE, N. M., OFSTEDAL, M. B., & BENNETT, J., (2005) «Health and living arrangements among older Americans», *Journal of Aging and Health*, 17(3), 305-335.

MALUQUER DE MOTES BERNET, C., (1998) «La formación y consolidación de las explotaciones agrarias familiares en Cataluña en los siglos XVII a XX», *Mélanges De l'Ecole Française de Rome, Italie et Méditerranée*, 110(1), 95-98.

MUTCHLER, J. E., & BURR, J. A., (1991) «A longitudinal analysis of household and nonhousehold living arrangements in later life», *Demography*, 28(3), 375-390.

O'BRIEN, R. M., (2011) «Constrained estimators and age-period-cohort models», *Sociological Methods & Research*, 40(3), 419-452.

REHER, D. S., (1998) «Family ties in Western Europe: Persistent contrasts», *Population and Development Review*, 24(2), 203-234.

ROBERTSON, C., GANDINI, S., & BOYLE, P., (1999) «Age-period-cohort models: A comparative study of available methodologies», *Journal of Clinical Epidemiology*, 52(6), 569-583.

SOLSONA I PAIRÓ, M., & TREVIÑO, R., (1990) «Estructuras familiares en España». Madrid: Ministerio de Asuntos Sociales. Instituto de la Mujer.

SOURDRIL, A., & AUGUSTINS, G., (2011) «Du voisinage à la parenté: Le «système à maison» aux prises avec le changement social dans le canton d'Aurignac», *Ethnologie Française*, 42(1), 79-92.

SPITZE, G., LOGAN, J. R., & ROBINSON, J., (1992) «Family structure and changes in living arrangements among elderly non married parents», *Journal of Gerontology*, 47(6), S289-296.

TOMASSINI, C., GLASER, K., WOLF, D. A., VAN GROENOU, M. I. B., & GRUNDY, E., (2004) «Living arrangements among older people: An overview of trends in Europe and the USA», *Further Release of 2001 Census Data*, 1329, 24.

WILMOTH, J. R., (2006) «Age-period-cohort models in demography». In G. Caselli, J. Vallin& G. Wunsch (Eds.), «Demography: Analysis and synthesis» (pp. 227-236). Boston: Elsevier.

WOLF, D. A., BURCH, T. K., & MATTHEWS, B. J., (1990) «Kin availability and the living arrangements of older unmarried women: Canada, 1985», *Canadian Studies in Population*, 17(1), 49-70.

WOLF, D. A., & SOLDO, B. J., (1988) «Household composition choices of older unmarried women», *Demography*, 25(3), 387-403.

WOROBEY, J., & ANGEL, R., (1990) «Functional capacity and living arrangements of unmarried elderly persons», *Journal of Gerontology*, 45(3), 95-101.

YANG, Y., FU, W. J., & LAND, K. C., (2004) «A methodological comparison of Age-Period-Cohort models: The intrinsic estimator and conventional generalized linear models», *Sociological Methodology*, 34(1), 75-110.

ZUERAS, P., & AJENJO COSP, M., (2010) «Modelos de convivencia de las personas mayores en Cataluña. Impacto del deterioro de la salud en la independencia residencial», *Revista Española de Geriatría y Gerontología*, 45(5), 259-266.