Distant relatives? Demographic determinants of long-term developments in intergenerational proximity, The Netherlands 1650-1899[1]

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Summary

The involvement of children in the care of their elderly parents in early modern Western Europe has traditionally been studied through developments in household composition, given that co-residence is usually considered as an important indicator for the likelihood of intergenerational support. In more recent studies, the focus has shifted from the geographically fixed unit of the household to the strength of family ties and the role of family networks, as it is increasingly recognised that intergenerational support can take various forms and is not necessarily restricted to members living under the same roof. But, although day-to-day contact might not be a necessary precondition for effective support, residential proximity to a large extent does facilitate both actual exchange of mutual support, even nowadays.

In this paper we move 'back to basics' to investigate what a late timing of marriage and 'neolocality' of the Western European early modern household formation process actually implied for the likelihood of intergenerational support. How many children were still alive when their parents became 'old'? How far did surviving children move away from the parental home when starting their own household? And to what extent was residential proximity between generations influenced by factors such as survival status of the parents, geographical region and urban or rural living? In our analysis of genealogical data from the Netherlands (1650-1899) we show that due to high marriage ages and small spousal age gaps, life cycles of children and parents were going through difficult periods at the same time, with the elderly as potential victims. To some extent, the risk of 'hardship' was compensated for by relatively small geographical

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distances between the parental and children's households, allowing for exchange of support. We discuss our outcomes in the broader context of alternative options and elderly care arrangements that were developed from the early modern period onwards.

Keywords: household proximity, intergenerational support, genealogical data, squeezing life cycles

Introduction

Intergenerational support may be defined as exchange of resources (e.g. meals) and services (e.g. cleaning, cooking, care) between two or more generations and may describe upward support (children towards their parents) and downward support (parents towards their children and children's children). This support can be delivered in various forms, including physical care, emotional support and financial transfers (both inter-vivos and post-mortem). Several studies have shown that reciprocity is an important explanation for these forms of exchange between generations: children provide physical support to their old parents out of gratitude for earlier care they received and/or in the expectation of a reward in the (nearby) future, such as support in raising their own dependent offspring or an inheritance; a grandmother may move to the household of one of her children and receive shelter and food in return for exchanges yet to take place (Michielin & Mulder 2007; Silverstein et al. 2002).

Clearly, for several forms of intergenerational support, residential proximity is an important precondition. Face-to-face contact is a necessary element to make the provision of localized, everyday routine-services such as cooking, cleaning and physical assistance possible, but also facilitates the exchange of other forms of care such as emotional support. Several studies since the 1990s on present-day effects of physical distance between households have shown that an increase in distance has a negative effect on the exchange of support between parents and children (Michielin & Mulder 2007, 655). Even in societies with fast and easily accessible means of transport the level of support decreases when the geographical distance between children and parents exceeds five kilometers (Knijn and Liefboer 2006).

One could argue that for historical societies which lacked an extensive transport network or instantaneous communication, the issue of geographical proximity may have mattered even more. Distance was also a central element in Laslett's (1988) thesis on the effect of household composition and marriage patterns on the likelihood of exchange of support between children and parents. His ideas were a strong argument against the prevalent view of the past in which the majority of the elderly presumably lived with

their children in multigenerational households, allowing direct access to kin support. According to Laslett, the causes of the lack of intergenerational cohabitation were linked directly to specific features of Western European household formation processes. He argued that the features of EMP-societies (neo-locality of married children, a relative high number of lifetime singles (both men and women) and high marriage ages for women) often made it impossible for the elderly to fall back on their children as a source of support. The practice of neo-locality in combination with relatively high marriage ages led to "squeezing household cycles": at the time when parents became old and in need of help, their just-married-children were busy with setting up their own household, and taking care of their own small children. Given the rather small spousal age gap between couples, this squeeze-effect was in fact double: both parents and parents-in-law would be in need of help at more or less the same time. The resulting relative small capacity of kin support made it necessary to develop alternative, extra-familial solutions (Bouman, De Moor & Zuiderduijn 2013), with very long-lasting effects still visible in present-day societies (see Reher, 1998; and for a recent overview: Mönkediek & Bras 2014).

Since Laslett, demographic historians, predominantly using census data, have studied the composition of households and living arrangements of the elderly in several European regions and communities using co-residence as an important indicator for the likelihood of intergenerational support, with particular focus on widows. Möring (2010), for instance, referring to several community-studies, suggested that around 50-60 percent of the widows lived together with married or unmarried children in several parts of both England and continental Europe with higher percentages of cohabitation in more rural areas, in particular among the more well-to-do and among farmers with their own land and property (Möring 2010, 242-243; see also: Wall 1992; Robin 1984; Fauve-Chamoux 2002; Moring 1996). Recent studies have suggested that this was less common in the more intensively urbanized regions, such as seventeenth-century Holland, where moving into the household of married children was not a common practice (Boele, Bouman & De Moor 2014). This study has shown that three-generation-households were very scarce with only 1-1.5 % of the elderly sharing a household with one of their children. Instead of moving into the household of their married children the elderly continued to live together with a partner or lived on their own, in a substantial number of cases accompanied by a lodger or servant (Boele, Bouman & De Moor 2014). Other elderly, around 5-9 %, were using the facilities provided by charitable or commercial elderly care institutions (Boele & De Moor 2017).

In the meanwhile, the focus on co-residence as an indicator for intergenerational support relationships has met some critique, as sharing a household is an important but not necessarily the only way to provide support, and living-in is not per definition the best solution for the elderly. Tamara Hareven (1994) used the expression 'intimacy from a distance' to describe the intensive support relationships that could exist among kin not living in the same house (see also: Ottaway 2004). At the same time, studies of intergenerational support relationships in Eastern European regions have shown that the existence of co-residence of old parents with their (married) children as such is no guarantee for social contact and the exchange of support (De Jong Gierveld & Tesch-Römer 2012; Manfredini & Breschi 2013).

In several recent studies the aim is therefore to go "beyond the household" (Sovic, Thane & Viazzo 2016; Bengston 2001; Plakans & Wetherell 2003) with a strong emphasis on the study of kin networks and related to this, a focus on the strength of family ties (Reher 1998). Case-studies of nineteenth and twentieth century communities in the United States have for instance shown how parents and adult children, though living in separate households, could have intensive contact, because their houses were actually next door to each other (Ruggles 2003; see for Italy: Castiglioni 2014). Although the line between such close proximity and actual cohabitation is very thin, the use of indicators such as the geographical distance between the households of elderly parents and their children and the frequency of contact can resulted in a more layered and regionally diversified picture of varieties in intergenerational support (Mönkediek & Bras 2014; Hank 2007).

But the picture remains rather static and limited to the time frame of the 19th-20th centuries, whereas in the literature it becomes clear that the changes in terms of household formation and potential effects on intergenerational support most likely originated much earlier. Moreover, the picture for the 19th and 20th century may be heavily influenced both by large migration movements and by increased transportation facilities. Going back to the period before the 19th century may help us to unravel the patterns related to household formation and marriage patterns more easily. Until now, information about long-term trends in the geographical distance between parental and children's households is scarce, mainly due to a lack of suitable data (Leopold et al. 2012). Most studies are case-studies of communities in the second half of the 19th or the 20th century (Robin 1980; Wall 2010; but see also: Adams et al 2002) with often sample sizes too small to analyze to what extent individual biographical information such as birth order, gender or marital status matters for the geographical mobility of the

children (Wall 2010) and phenomena such as long-distance migration may have affected intergenerational support.

A long-term approach should result in a clearer picture of the actual distances between parental households and households of married children for the period before this era, along with a better understanding of the evolving relationship between the many different aspects of household formation mechanisms, such as the marriage ages of both partners, age gaps between partners, fertility levels and the number of life-time singles in societies. In addition, this should result in a better understanding of the long-term developments in the balance between on the one hand family support and on the other hand extra-familial solutions provided by the market, the community or the collective.

In this paper we discuss the presence of a 'double life cycle squeeze' and the effect of geographical distance on the likelihood of exchange of intergenerational support using a database with geocoded genealogical data from the Netherlands, 1650-1899 (see below for an extensive description). We hereby approach distance both from a purely quantitative perspective (the further away, the harder to provide care) but we also look for indicators –such as the effect of widowhood of parents on choice of living location of children- which may help us to understand whether care taking was actually a motivation and thus an explanation for a specific distance between parents and (grand)children. The Netherlands offer an excellent case-study for these forms of analysis, for different reasons. To start with, the Netherlands can be situated in what is considered the core-area of the changes in the Western European demographic regime in the early modern period (De Moor and van Zanden, 2010), whereby the low percentage of multi-generational households in combination with neo-locality creates a large variety in distances between parents and children. Secondly, the combination of an attractive urban environment –with amongst others 17th century Amsterdam as the immigrant city *par excellence* - with large rural areas in the North allows us to test the impact of urbanisation on the physical proximity of generations. And furthermore, the active community of genealogists in the Netherlands has facilitated access to large amounts of data, which allows us to apply the multi-generational approach, after having applied a systematic control of the data, see further.

Questions

In this paper, the possibility of parents living close by their offspring and falling back on them as providers of support in old age is examined from three perspectives, thus adding a more complete and "layered" perspective to the issues addressed in the

debates mentioned above so far. First of all, we look to the demographic conditions affecting the likelihood that two or three generations are alive at the same point in time (Ruggles 1986; Szoltysek 2016); secondly, we take into account the timing of events in the parents' and children's life cycles to what extent children were actually available to deliver the necessary support. Finally, we consider geographical distances between the parents' and children's households affecting the likelihood that physical contact was possible on a regular basis and use indicators such as widowhood of parents to find out more about the distances between parents and their (grand)children

1. *Demographic dimension: two generations available?*

To what extent did two generations survive to make the need and exchange of intergenerational support theoretically possible? And how did this change over time, given that the average longevity of people and marriage ages increased? Methods such as Generalized Inverse Projection or micro-simulation shows for England and Amsterdam (Smith & Oeppen 1993; Van Leeuwen & Oeppen 1993) that the number of adult children and grandchildren alive varied throughout the centuries (Wall 2010, 100). Fluctuations in child and adult mortality thus influenced both the extent of demand and supply of intergenerational support. Although we will not study (trends in) fertility and mortality specifically in this paper, it is to be expected that these demographic parameters will affect our figures substantially (Ruggles 1986). We analyze our data from two different perspectives: on the one hand, the parental perspective, whereby we are interested in e.g. the number of children available at the moment of ageing; on the other hand the child's perspective, whereby we are interested in estimating the potential support from parents during (grand)child rearing; this can be done by looking at the number of parents alive at the moment of marriage of their children (which is likely to be the starting point for a new household at another location than the parents' house) or the place of birth of the first grandchild. Both perspectives influenced both the demand and the supply of intergenerational support.

2. *Timing: squeezing life cycles?*

An extra element that has to be taken into account is whether children were actually available to provide the necessary support regarding the scarcity of resources such as time and money. It is not only the question of whether parents and children were alive at the same time, but also if they were capable of providing mutual support. The relatively high marriage ages of both men and women in the Netherlands increased the likelihood of a squeezing of life cycles. Marriage at a relatively high age of both parents

and their children, could result in a situation in which parents became old and in need of help, while their just-married children were busy setting up their own household. As spousal age gaps were small, married children were confronted with the request for support from both the husband's and the wife's parents simultaneously in need of support (Bouman, Zuiderduijn & De Moor 2012). To investigate the likelihood of squeezing life cycles we have to take into account variables such as the number of years of overlapping generations, developments in marriage ages and the age of grandparents alive in the period their grandchildren should be cared for.

3. Geographical dimension: Distance between households of parents and children

The third dimension we take into account is the geographical distance between two generations. To what extent did mobility of individuals affect the physical availability of children to care for parents in old age? Which proportion of relatives lived locally? And what were the main characteristics of parents and children that lived close to each other? To answer these questions we look to developments in the geographical distances between generations and differentiate between those who lived in the same place (0 kilometers), within walking distance (1-7 kilometers) and those living further away, making the exchange of care on a regular basis less likely. In addition, we examine to what extent the moving distance of children was influenced by personal features of both parents (age, marital status) and children (gender, marital status, and birth order), as well as contextual factors (urban/rural environment).

Regarding the age and marital status of parents we expect higher levels of geographical proximity of kin when parents became older or widowed or both. Affective feelings or the idea of obligation can make it difficult to leave a widowed parent alone and thus influence the moving distance of children (Leopold 2012; Pers & Mulder 2013). Conversely, remarriage of the widowed parent could be an incentive for children born from an earlier marriage to leave the parental household.

Regarding the personal characteristics of children, we expect gender to make a difference in geographical proximity as daughters in general tend to invest more in family relations than sons and thus stay closer to their own parental home (Leopold 2012; Mulder & Van der Meer 2009; Kok & Mandemakers 2016). In addition, as women were often responsible for the upbringing of offspring, the help of nearby parents was also very welcome. Mothers also tend to get more support from their children at old age or in case of widowhood (Pers & Mulder 2013). However, other studies on the effect of gender on geographical proximity show mixed findings (Michielin et al. 2008), with some studies showing no gender differences at all. In addition, customs and traditions,

such as the expectation that in farming families the wife moved to the locality of the husband, or male dominance in location decisions of couples, could result in larger distances with the wife's parental household (Kok & Bras 2008; Van der Pers & Mulder 2013)

Furthermore, birth order is expected to influence intergenerational proximity with younger children staying closer to the household as they often still live at the parental home when parent(s) gradually become in need for help. If a couple gets their youngest child for instance around age 40, this child will be about 15 years old when his or her parents begin to have the first old age disabilities. As such, this child becomes more involved in the care of their parents than his or her older brothers and sisters who already left the parental home, probably taking care of their own families and less aware of the growing needs for care. In present-day studies this effect has been called the 'first-mover advantage' (Wing Chan & Ermisch 2014; Konrad et al 2002). The argument is that firstborn children have more freedom to choose the location they want to live in, as parents are still younger and less in need of help at the moment their oldest children leave the parental home.

Several studies have also shown a positive relationship between the number of surviving siblings and moving distance. Only children stay closer to the parental home (Wing Chan & Ermisch 2014) than children with siblings. The necessity of geographical proximity decreases when siblings think obligations towards parents could be divided among each other (Leopold 2012). And as the parental resources have to be shared with other siblings, the 'gain' of staying close also diminishes (see also: Kok & Bras 2008).

Contextual factors such as living in an urban or rural environment result in different local economies, occupational structures and thus in differences in incentives for the younger generation to move. The general argument is that in agricultural societies children would stay at the parental home waiting for the inheritance of the farm, while taking care of their old parent(s). This, however, will only occur in those cases when there is some considerable property to inherit and will be mitigated by inheritance rules (De Haan & Hoppenbrouwers 1998; Bras & Van Tilburg 2007). The availability of other agrarian and non-agrarian job opportunities will influence migration behavior as well (Kok, Mandemakers & Mönkediek 2014). In towns or urban areas, on the other hand, one would expect children to be less dependent on their parents and, e.g. due to more wage labor opportunities, diminish the incentive to remain at the parental home or the same location (Ruggles 2003; 2011). Because job opportunities are generally better in an urban environment, this reduces the necessity to move to another location for occupational purposes (Mulder & Kalmijn 2006; Pers &

Mulder 2013). We therefore expect larger moving distances for men and women living in a rural environment than in towns.

Data description

This paper makes use of a collation of 924 Dutch genealogies, which we refer to as the Dutch Genealogical Database (DGB). The genealogies were obtained via a crowd-sourcing project for genealogical data files, which were then filtered, error checked and aggregated into a single database (Gellatly 2015). Family tree data can give us a broader chronological and geographical coverage than localised historical population reconstructions, because of the scope and volume of genealogical events and connections that have been collected and collated by individuals researching their family trees. Moreover, given the intergenerational nature of this research, this allows us to follow multiple generations beyond the boundaries of a single location.

To reach out to genealogists in the Netherlands, we worked in collaboration with a popular genealogy website (www.genealogieonline.nl), to obtain family trees.[3] The 1,611 family tree files in GEDCOM-format (GEnealogical Data COMmunication) that were obtained, underwent a thorough error screening process, in which files were excluded if they contained more than 0.5% of a number of potential error indicators related to vital life events and family relations. After filtering out those genealogical files with most errors, data from 924 files remained in the database.

The events in genealogical data files are often associated with place names, but these places normally do not have geo-coordinates associated with them and are poorly standardised across files. For this study, in which geocoding is of crucial importance, geo-coordinates were added to the place names using a semi-automated procedure, in which the place names in the genealogies were automatically matched (using a natural language search) to place names in the GeoNames database (http://www.geonames.org/), which contains common and alternative names for places, as well as geo-coordinates across much of the world. Human input was then used to identify which of the automated matches was the correct one, to manually geo-code the place or mark a place as 'unclear' where necessary. The geocoding was done blind to the type of event being geocoded, or to other events related to the individuals, as this may have a introduced a bias, in respect to selection of the correct match.

[3] In collaboration with the platform, genealogists were encouraged to submit their data for scientific research purposes, whilst being assured that their work would remain confidential and only be published in an aggregated statistical form, as in this paper.

There were 5.89 million place names associated with events in the genealogical database, which consisted of 176,343 unique character strings (many of which were simply variations on the same place, e.g. "Amsterdam, Netherlands" and "Amsterdam, NL". The priority for geocoding was to code those place-name character strings which applied to the most events. In total we geocoded 40,614 place-name character strings, including all that applied to three or more events. This resulted in 4,930,265 geocoded places.

After removal of duplicate marriages,[4] the final dataset comprised marriages between 1650 and 1899, in which marriage age of the focal spouse was above 13, the lifespan of the spouse was not based on estimated dates[5], the lifespan of the spouse was <111 (to exclude cases with unrealistically long life expectancies) and was greater than the age at first marriage, and the marriage place was geocoded.

Data structure

In the following analyses, we look at inter-generational support from a two and three generation perspective. In all analyses, the data is centred on a selection of focal marriages (first marriages of both marital partners only), in which we know the year of marriage and where the place of the marriage geocoded. In the two generation analyses (223,646 marriages), we are involving information on the parents of the focal marriage, i.e. the mothers and fathers of the focal husbands and wives. In the three generation analyses (140,626 marriages), we also involve information on the children (953,668) of the focal marriage. There is always information on the year and place of the focal marriage, whilst both wife and husband must also have a surname (as this is used along with marriage year for duplicate identification). However, information about the birth, marriages and deaths of the parents and children of the focal marriage. There are focal marriages that are not associated with children, but it is not possible to ascertain how many of these are due to missing data or non-fertile marriages.

We were able to look at the number of children who were alive during the old age of the parents, to give an indication of developments in the availability of children as carers for their elderly parents. Importantly, for this analysis, the data extraction is based on families in which the year of death (as well as year of birth) is known for all

[4] This was done through a comparison of the first seven letters of each spouse's surname and the marriage year.

[5] In GEDCOM files, the author will often indicate whether the date that they entered was estimated or not.

siblings, and it is important to note that there are fewer children for which we know the death date as well as the birth date in the earlier half centuries (Table 1)

Table 1. Percentage of missing deaths for children in families where birth dates of children are known.

Half century	% missing deaths relative to births
1650-99	52.5
1700-49	47.9
1750-99	31.4
1800-49	19.7
1850-99	31.0

In addition, with the information on the age at death of the parents, we can quantify how long the parents outlive the marriage of their children. This will give an indication of the period in which care might be required. These analyses focus on the firstborn child initially, as the duration of survival of parents beyond the marriage of their children is partly a function of the birth order of the child. We were also interested in identifying how many grandparents were alive at the birth of the first grandchild[6] and thus how likely it was to have three-generations alive. Including information on the place of birth of the grandchild gives a better indication of the whereabouts of married children when they start their own home as place of marriage is not necessarily the place the couple starts its own household. We compared birth places of grandchildren and place of death of the grandparents checking for the availability of maternal and paternal grandparents separately. We also used the geocoded data to calculate the actual geographical distance between generations and set a threshold distance for possible caretaking although children and parents do not live in the same place. We

[6] Please note that this grandchild is not necessarily the first grandchild of these grandparents overall. We include the firstborn children of each focal marriage – irrespective of married siblings with offspring themselves.

choose a 7 km threshold based on the possibility to provide support on a daily basis (which implies living at a walking distance of one to one and a half hour) and the methodological limitations to compute distances from geocoded information taking the centre of a municipality as the point of departure.[7] In addition, we looked to specific factors such as whether parents lived closer to their children at the birth of the first grandchild, if the parent had become a widow before the birth of the first grandchild or difference between first and lastborn children to see whether last borns may have been more likely to stay near the parental home to fulfil the role of a carer.

The analyses are focused on marital couples and we only select first marriages of partners (for now irrespective of a later remarriage) We choose to not include any information on remarriages of remaining spouses to have an 'homogeneous' sample regarding marriage age, spousal age gap etc., though we are aware that remarriage and the resulting additional children might affect support arrangements, both in a positive and possibly also negative way. Above that, the distance between death places (grand-) and the marriage place of their children/birth place of their grandchild is limited to 300 km.

Source critique

Genealogical data based on trees of ascendants is an important source for studying long-term demographic developments. However, it should be clear that it does not represent a perfect reconstruction of past populations. In analyses of US genealogies, Hacker (2010) showed substantial under-reporting of infant and childhood deaths, under-reporting of female deaths, a bias toward larger and longer-lived families and married couples who reproduce, also a lack of coverage of the nation's black and foreign born populations and a bias toward families originating in the northeast and living in the north. In the DGB we must also assume that there is a high probability that infant and childhood mortality is also under-reported to some extent, although this will likely vary according to the time period. When comparing the average number of children belonging to each woman in our sample with what is known from existing case-studies (Mentink & Van der Woude 1965; Schuurman 1979; Noordam 1975) however shows that the numbers are not too much lower. On average the couples in our sample had 3.17 children (1700) increasing to 4.44 in 1750 and to 5.15 in 1850.[8]

[7] We have to take into account that it likely that this geocoding based on the location centre results in an underestimation of the moving distance of urban generations.

[8] Schuurman (1979) calculated for Duiven 3.8 children in the 18th century; Noordam an average of 4.7 for 18th century Maasland.

We must also assume that there is an under-representation of unmarried persons and childless couples, because these people have no direct line of descent to future generations and are therefore less likely to be found by genealogists who primarily investigate their line of descent from the past. This also appears in our database with percentages of never married children surviving to age twenty-five and thirty-five of 12 and 11 percent.[9] These numbers are rather low compared to what is known from other studies. In Amsterdam in 1830 for instance, the proportion of never married people (aged 40-44) was almost 20% (Devos et al. 2016). Though in general percentages were lower in the countryside, our database still shows a considerable underestimation of unmarried people. We come back to this point later, as theoretically, unmarried children could play an important role in the care for their old parents.

Regarding the proportion of childless couples we calculated a percentage of 9% in the eighteenth and 24% in the nineteenth century. Due to lack of comparable information, it is difficult to compare these numbers with other data.

In relation to migration, genealogical data theoretically offers considerable advantages over other types of population reconstruction. A recognised problem with historical population reconstruction, which is based on local parish registers, is that it does not include those individuals who have migrated, which, for example, is typically expected to drive estimates of local marriage-ages downwards (Desjardins 1995). In genealogical data, which is compiled from multiple sources and seeks to track individuals by relatedness, rather than by geography, there is a much better scope for estimating migration. The problem with genealogies is that they only contain information about geographical locations related to certain events in the family life course, primarily births, marriages and deaths, whilst other occasions of moving during the life course are missing. Therefore, we have to take into account that actual moving occasions were probably higher than what we find in the DGB (see for an extensive description: Adams et al. 2002).

In addition to specific biases we also checked the more general features of our dataset. With regard to the distribution of urban and rural families we looked to the proportion of urban marriages over time, defining as 'urban' those locations with a population over 5.000 inhabitants.[10] Percentages of urban marriages varied between 26 and 28 per cent in the eighteenth and nineteenth century with a slight increase in 1750

[9] We only take into account those individuals of which we know birth and death dates of (based on families of which we have information on all members and have birth and death dates, 1/3 of death dates missing).

[10] We thank Eltjo Buringh for the dataset with information on urban places with >5000 inhabitants in the Netherlands post-1600 period.

(34%). Compared to what is known about urbanization levels in the Netherlands (based on the number of inhabitants in a specific place) rural families seem to be slightly overrepresented in our database though the difference is small (Paping 2014; De Vries 1984).[11] The regional distribution of cases mainly corresponds to the population figures as mentioned in Van der Woude & De Vries (1997) with a little underrepresentation of the province of Limburg and overrepresentation of Groningen.[12]

We also checked for the sex ratio of the offspring in the three-generation database. The expected overrepresentation of male offspring (because of a likely under-registration of daughters and the general focus on the patriline) appeared only slightly the case with proportions decreasing from 56% around 1700 (N=367) to a stable 52% in the nineteenth century (N=49.329). Both for occupation and religion, the amount of individual information available is too limited to use for long-term analyses.

Results

1. Demographic framework

1.1 Two generations available?

On the 29th of October 1841, Jerfaas (or Serfaas) Albertus van Lienden married his pregnant bride, Clasina van Barneveld, in Amerongen, a small village in the middle of the Netherlands. Aris was born in 1814 in Lienden, another small village in the western part of Gelderland as the first child of Cornelis van Lienden (ca. 1790-1878) and Jannigje Jorissen (1787-1862). Clasina was born in 1817 in Amerongen as the fifth child of Hendrik van Barneveld (1774-1839) and Dirkje (van) Harskamp (1787-1872). After their marriage, the newly-wed couple stayed in Amerongen. At the moment of their marriage the father and mother of Jerfaas were still alive, being 51 and 54 years old. Clasina's father already died two and a half years earlier. Her mother was 54 when her daughter married and left the household.

Jerfaas and Clasina married at the same age as most their age peers. On average, marriage ages were relatively high in the eighteenth and nineteenth century Netherlands with 24 years for women in the 18th century gradually increasing to 25 in

[11] Paping 2014, Table 3, mentioned urbanisation-rates for 1500-1800 using various measures. Taking a >10.000 inhabitants requirement Paping calculated percentages of 32.9 (1700), 29.7 (1750) and 25.74 (1800). For the same timeframe De Vries (1984) calculated percentages of 33.6; 30.5 and 28.8 percent.

[12] We compared distribution of cases for period 1750-1799 and 1800-1849 and compared these with percentages mentioned in Van der Woude & De Vries (1997), p. 60. See Appendix 1

the 19th century (see Appendix, figure 1 and 2). Men married slightly later with mean ages fluctuating around 26-27. As a consequence spousal age gaps were rather small (1-3 years), from 1800 onwards stabilizing around 2.0-2.5 years. This implies that children usually had their first marriage when parents were between 50-60 years of age (see Appendix, figure 3).

However, as appears from the death of Clasina's father, not all parents survived till the marriage of their children. Table 1 reports the likelihood of parents being alive at the moment of marriage of their child for 50-year marriage cohorts of the parents (separately for men and women and for the parents of both husband and wife), with an increase in the proportion of parents alive from 1650 onwards. The likelihood that the mother of the wife survived was the highest, the father of the husband the lowest. Only a very small proportion of the just-married couples had no parents or parents-in law alive: 9 percent in 1700, diminishing to 2 percent in 1850. Given that the increased likelihood of parents being alive is not due to a decrease in the average marriage age (see further) it can only be attributed to a reduced mortality of the parents. Elsewhere we have already indicated that longevity already increased from the 17th century onwards among the population over 50 (Gellatly et al. unpublished). This implies that it became more likely that parents survived and that they, particularly after a certain period, would become more dependent and probably increasingly be in need of help from their children.

Table 2. Percentage of grandparents still alive at the first marriage of their children[13].

Marriage of child						
		1650-99	**1700-49**	**1750-99**	**1800-49**	**1850-99**
father of husband	**%**	47.0	55.4	57.1	58.4	60.0
	N	555	1185	3506	20710	49155
mother of husband	**%**	59.9	55.8	63.4	66.0	65.5
	N	352	929	3092	20259	48336
father of wife	**%**	51.8	58.0	64.1	62.2	63.7
	N	284	700	2540	19088	47737
mother of wife	**%**	63.2	62.9	70.6	69.3	69.1
	N	201	563	2300	18835	47404

Table 3. Percentage of grandparents still alive at the birth of their first grandchild, and their average age.

Birth of first grandchild						
		1650-99	**1700-49**	**1750-99**	**1800-49**	**1850-99**
father of husband	**%**	38.9	48.2	50.7	53.6	57.7
	N	396	842	2716	15192	33893
	Age	60.5	60.8	61.4	60.0	60.5
	N	116	309	1193	7292	18822
mother of husband	**%**	54.9	49.1	57.1	62.6	63.6
	N	253	672	2344	14787	33111
	Age	59.0	58.7	59.4	58.1	59.1
	N	108	259	1159	7974	19954
father of wife	**%**	42.9	46.6	59.5	58.2	61.9
	N	168	431	1776	12173	27637
	Age	57.1	59.3	59.0	58.6	59.0
	N	55	159	920	6220	16319
mother of wife	**%**	55.8	55.1	66.5	66.5	67.5
	N	129	352	1621	11978	27511
	Age	55.6	56.0	56.5	56.3	57.2
	N	53	151	889	6774	17470

Childless couples

[13] The difference in N between the % alive and age is because the number of grandparents for which we have a known age is lower than those where we know whether they were alive, because age requires both a birth and death date, whereas a death date suffices to know if the grandparent was alive.

Of course, there were also couples that remained childless. In our sample in the 18th century 9.9 % of all couples had no children. For the 19th century this percentage was almost 24%. Because of the data-structure, fertile marriages are overrepresented so these percentages are probably too low, especially for the earlier centuries. This however suggests that, especially for the nineteenth century, a considerable part of the elderly had no children at all to rely on. Almost two third of the wives and husbands of the non-reproducing couples reached at least the age of 60 and their age at death did not really differ from those elderly with children. Apparently, they were able to rely on other provisions to deal with the difficulties of old age, such as partner support and solutions outside the circle of family members.

1.2 Timing: squeezing household cycles?

But although adult children were still alive when the physical powers of their parents were waning, this did not imply that they were also able to provide care to their parents. After all, the amount of support in terms of time and resources that children provide is considerably reduced the moment they have their own offspring. Continuing with the previously given example, five months after their marriage Jerfaas and Clasina got their first son and in a period of fourteen years (1842-1856) Anthonia would give birth to in total 6 sons and 1 daughter. This implies that for at least twenty years after their marriage the couple had to take care of young dependent children. In the meantime their parents also grew older and were increasingly in need of help and care.

Jerfaas and Clasina are a typical example of a couple that had to distribute their time and resources among both the older and the younger generation. Like many of their age peers, they had to cope with a demand for care from both their children and their old parents. Squeezing of life cycles occurs when married children have dependent children (aged 0-10 years) and old parents in need of support (60+ or widowed)[14]. As appears from Table 3, we see that a grandparent being alive at the moment of the birth of their first grandchild varied from below 40% to nearly 70% percent. The chance of a grandfather being alive was lower than a grandmother, whilst the chance of grandparents on the wife's side being alive was higher than grandparents on the

[14] These old-age thresholds are based on the mean ages at entry of residents of early modern elderly care homes which was 61.1 years (Boele & De Moor 2017). Also the loss of a partner was considered as a breaking point, as many ordinances of elderly care institutions mentioned widowhood as an important requirement for admittance.

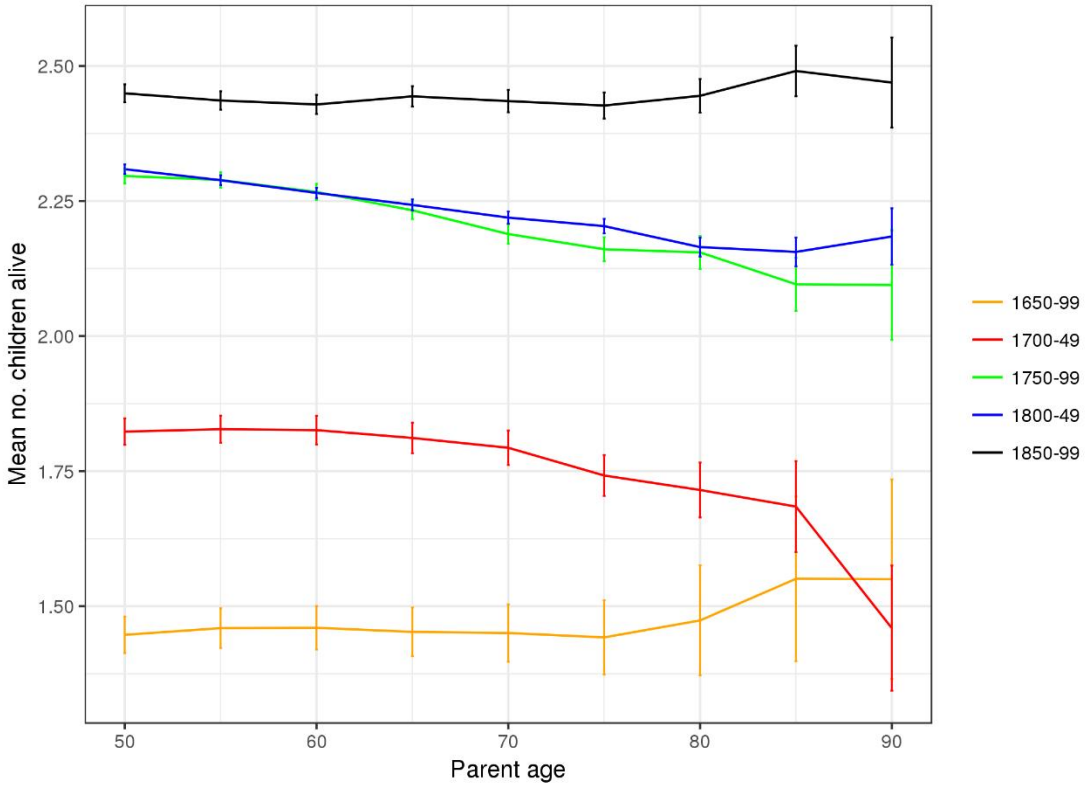
husband's side. This presumably relates to the age difference typically found with marriage, whereby the husband is older.

The results in Table 2 and 3 indicate that the majority of couples, even in the 17th century had to cope with squeezing household cycles, with more than half of all parents and parents-in law alive at the time when children were beginning to have their own children. This so-called double squeeze, in which parents and parent-in-law are alive and potentially in need of care at the same time that children are born, appears to have increased over time, due to the increasing probability of grandparents being alive. For example, the percentage of grandmother's on the maternal side who were alive at the birth of the first grandchild increased from 56 to 68 percent between the 17th and 19th centuries.

The burden of these “sandwiched generations” could, of course, be shared among siblings. Therefore, we have to take into account how many surviving children were available at the moment of ageing. It appears from Figure 1 that the number of children alive during parents' old age increased over the centuries. Between 1650-99, there were just over 1.4 children alive after parents turned 50, and this increased to about 1.8 in 1700-49, then to more than 2 children in the late 18th century and 19th century. These numbers are slightly lower than the estimations made by Smith & Oeppen (1993), using simulation programs to compute the likelihood that children and grand-children were alive at old age in pre-industrial England (mean number of children at age 50 and 60 (seventeenth century): respectively 2.3 and 2.1 and in the eighteenth century resp. 3 and 2.8) . The difference is probably a consequence of the underreporting of number of siblings in genealogical data with its focus on the vertical line of descendants.

Figure 1. Mean number of surviving children, according to parental age and half century of parent birth. Includes children born to parents from all known

marriages. Error bars are 1 SE.



These findings (Figure 1) certainly fits the expectation that rising longevity and declining mortality rates in childhood and in early adulthood would have resulted in more children being alive during parents' old age, given that fertility did not decline too sharply. [15]

Surviving brothers and sisters however often struggled with the same double burden of caring for parents and children. Another option for the family could have been provision of care by unmarried children who did not have children of their own. As stated above, in our sample 12% of all children aged 25 (as the mean age at marriage) were unmarried. On average, each couple had 0.44 children who were unmarried at age 25. This implies that almost 1 of 2 couples had at least 1 unmarried adult child. Because of the absence of locational information, we do not know if these unmarried children also lived in the parental household. On the basis of other studies we know that from the early modern period onwards, a considerable share of unmarried young adults, both

[15] It is possible that we only see more children alive during the parents' old age in the later half centuries because there are more missing deaths in the earlier half centuries, for reasons related to the greater absence of historical records from these earlier periods. However, death records in earlier half centuries are also likely to be missing because the children died at a young age. Therefore, although we cannot rule out the possibility that the result is an artefact of the missing data; the data may be missing because the children were indeed absent, which does not affect our data-analysis and interpretation.

men and women, worked as domestic servants or apprentices in other households (Boele, Bouman & De Moor 2014).

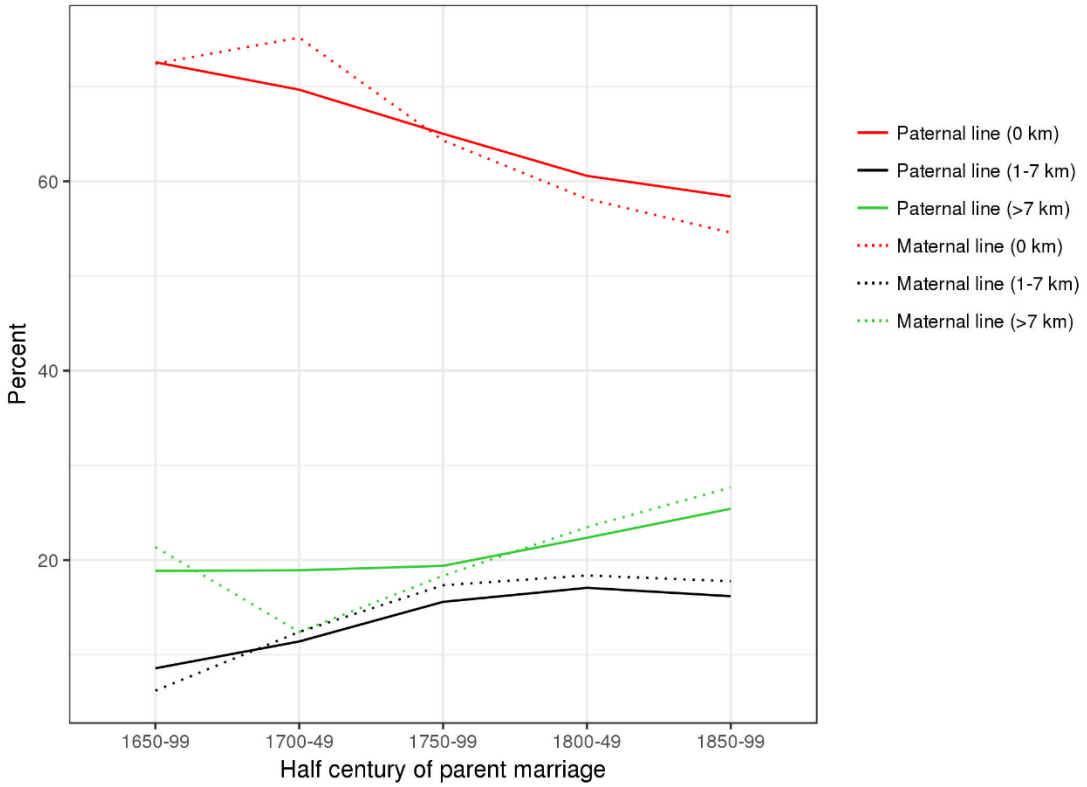
2. Geographical distance

Double squeeze situations could be solved to some extent by either living in the same house or at a not too great distance. We know that multi-generational households were rare in the early modern Netherlands (Boele, Bouman & De Moor 2014), with the Eastern provinces as the only exception, but living apart could be 'compensated' to some extent by living at a close distance. Returning to our previous example: when Dirkje van Harskamp gradually grew older most of her children lived in the same village making regular care possible. The distance between Jerfaas and his parents was larger. At the moment of their marriage Aris' parents were both alive and lived in Lienden, in a straight line 7 kilometres and using the available roads 9.5 kilometres away from Amerongen. Both died in this place, his father in 1878 and his mother in 1862. Though the distance between the two households was not enormous, it was unlikely that they had daily face-to-face contact.

To address the question to what extent generations actually played down the negative consequences of squeezing life cycles by residential proximity we calculated the distance between the two generations by comparing the place of death of the parents of the focal spouses (grandparents) and the place of birth of the grandchild (Figure 2). This gives us an indication of how close married individuals lived to their parents.

Figure 2. Distance between death of grandparents and birth of first grandchild, as percentages in each category (0 km, 1-7 km and >7 km), along the paternal

line (husbands) and maternal line (wives).

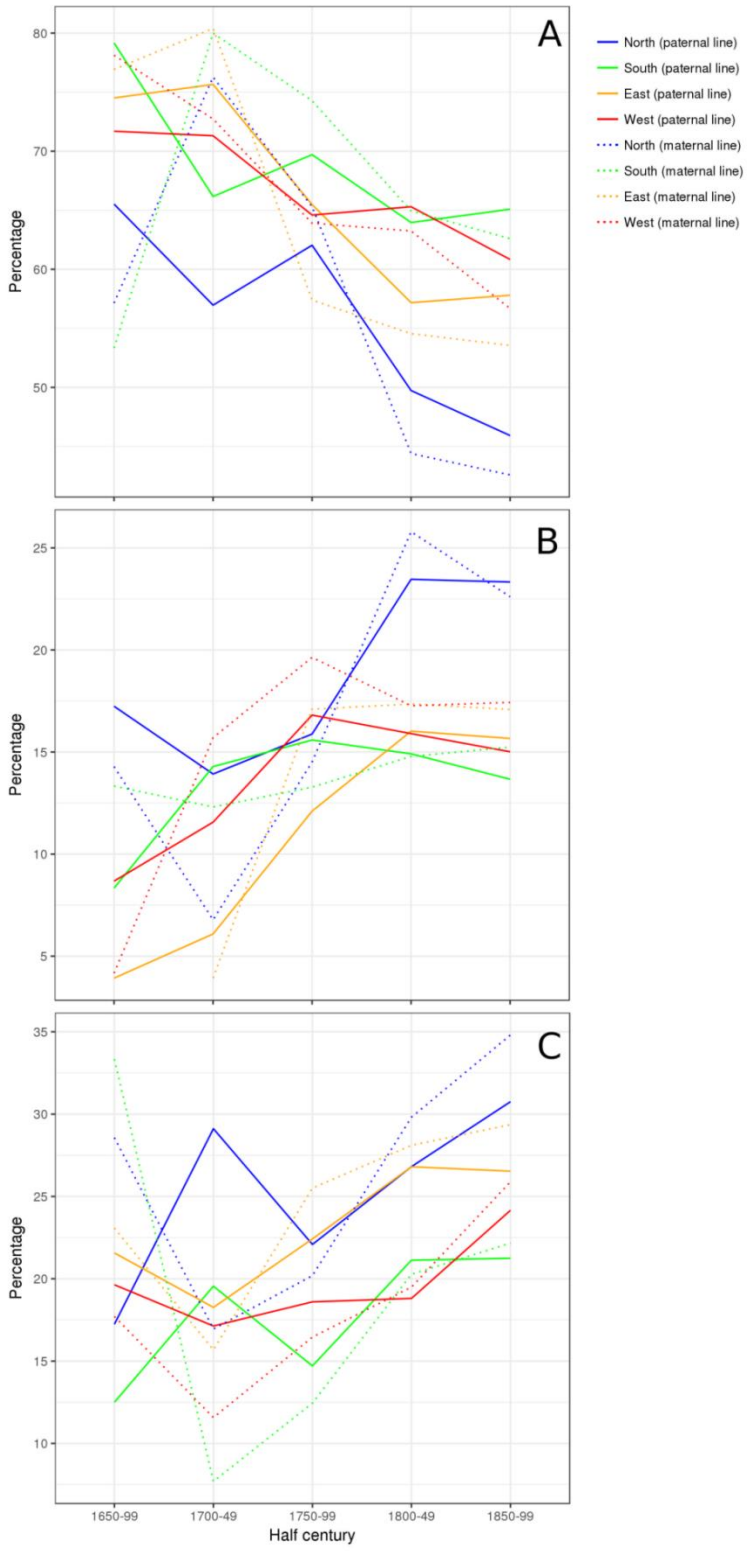


In the 17th century, over 70% of the couples with the firstborn grandchild lived in the same town or village as their parents (Figure 2). Couples who had migrated far from their parents (>7 km) were a rather small proportion of children, at about 20%, whilst those who moved short distance (1-7 km) were less than 10%. From the end of the eighteenth century onwards, the proportion of children that moved further away than 7 kilometres steadily increased to about 28% for females and 25% for males by 1850-99.

It appears that distances between the two generations differed per geographical region (Figure 3). The relatively high percentage of children living in the same location as their parents in the western part (Holland and Zeeland) compared to the rest of the country can be explained by population density and urbanisation levels. When these children move it is often more than 7 kilometres. Especially in the northern provinces of Groningen and Friesland almost half of the couples lived at another location than their parents and more than a quarter moved more than 7 kilometres. As a low populated region with only a few major towns, it was not likely that parents and children lived close to each other or at a distance where the exchange of daily care between the generations was possible. In all regions, the likelihood that children lived in the same

location as their parents steadily decreases, while more and more children live at more than 7 kilometers distance, especially in the Northern and Western regions.

Figure 3. Distance between birth of first child and death place of grandparents, according to region. A= 0 km; B = 1-7km; C= >7km[16]



[16] North: Groningen, Friesland, Drenthe; East: Overijssel, Gelderland, Utrecht, South: Brabant, Limburg, West: Holland, Zeeland

3. Main characteristics of parents and children living close to each other

a. Gender

Anthonia van der Pol stayed close to the household of her widowed father. At least, she was able to visit him regularly. More general, it seems from Fig. 2 that there was very little difference between males and female in terms of migration away from the parental home, when setting up their own family. The distances between the households gradually increased over time with larger percentages of children moving further away.

b. Marital status of parents

Did married children live closer to the parental household if one of their parents was widowed? As appears from Table 4, the couple were more likely to live near their parents when their first child was born, if one of their parents had been a widow. The exception is the wife's father, who tended not to live nearer to the family of his daughter if he was widowed

Table 4 Mean distance between death of parent and birth of first child, grouping all data from 1650-1899.

Husband's mother not widowed	11.33 km
Husband's father not widowed	11.47 km
Husband's mother widowed	9.9 km
Husband's father widowed	9.73 km
Wife's mother not widowed	10.78 km
Wife's father not widowed	11.16 km
Wife's mother widowed	9.47 km
Wife's father widowed	11.7 km

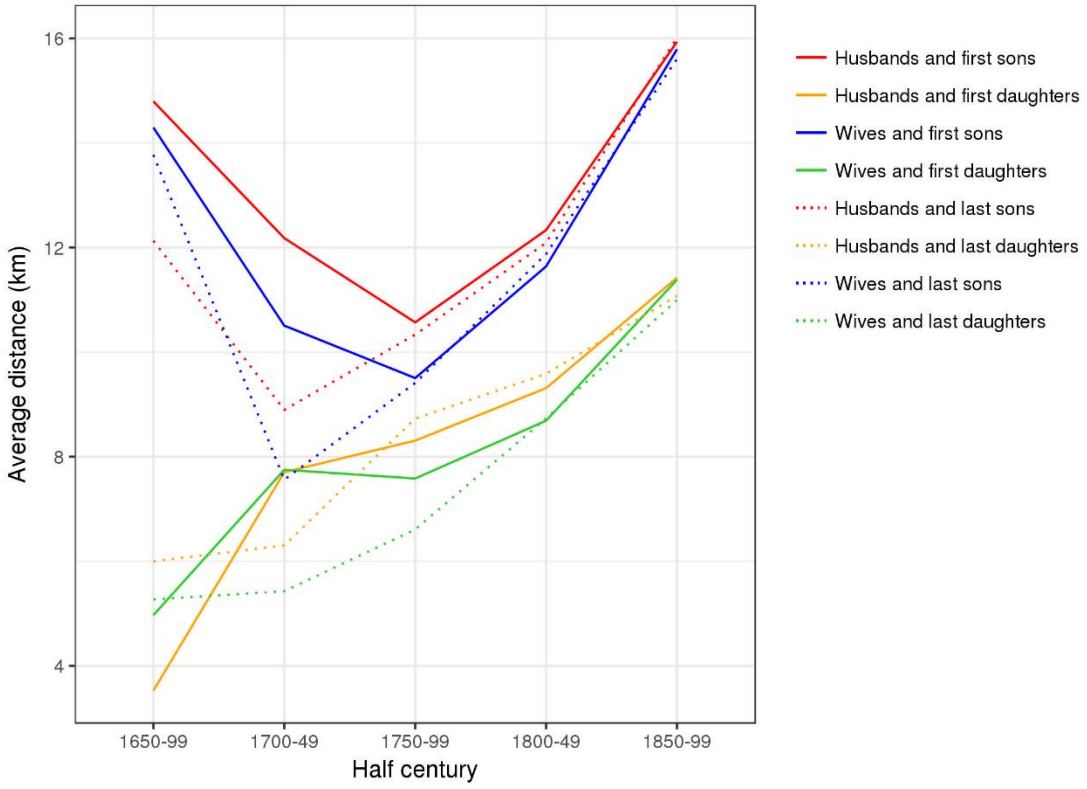
c. Birth order effect?

We expected a birth order effect in the distances between the generations with firstborns moving further away than last borns as a consequence of the first-mover advantage. To test whether there was any difference between firstborn and last-born children in terms of movement away from the parental home for marriage, we looked at the difference between the death place of parents (husbands and wives in focal marriages) and the marriage place of their firstborn and last-born children (Fig. 4). This analysis shows us two things:

-First, there is some indication of less migration of last-born sons and last-born daughters, as compared to firstborns, in the 1700-49 period (also for daughters in the 1750-99 period), but this pattern is not apparent in any of the later periods.

-Second, the distance between the death place of parents is less to the marriage place of their daughters than to the marriage place of their sons. This is well explained by the tradition of daughters getting married in the town of their parents. A statistical comparison of the distance migrated between birth and marriage shows that this is higher for husbands (mean: 13.2 km) than wives (mean: 10.3 km) and this is statistically significant (Wilcoxon matched pairs test: $P < 0.001$). This further confirms that couple were more likely to marry in the town of the wife's parents.

Figure 3. Average distance between death place of parent (Husband or Wife) and marriage of firstborn or last-born children.

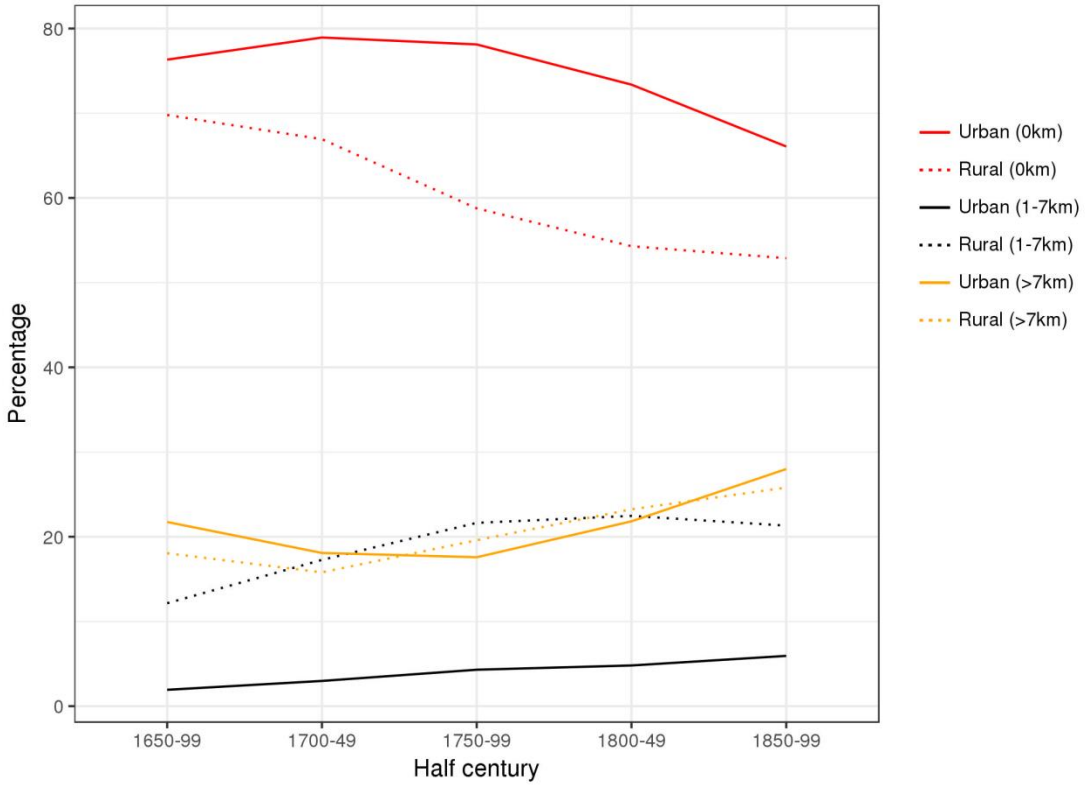


c. Urban and rural

When we compare the distances between generations of urban and rural families (based on the place of birth of the first grandchild and mean distance to death of grandparents) there is a clear difference between the two groups, with fewer urban couples living 1-

7km away (Fig. 5). The pattern we see is likely due to the greater distances that rural people had to move for work and marriage. However, there is little difference between urban and rural areas for migration >7 km. From the nineteenth century distances between generations increase both for rural and urban couples to more than 25 per cent living more than 7 kilometers away from the parental home.

Figure 5. Distance between death of grandparents and birth of firstborn grandchildren, where the birth of grandchildren is either in an urban or rural location.



Discussion

High marriage ages for both men and women and small spousal age gaps led to squeezing household cycles in most 18th and 19th century families in The Netherlands. Parents were getting old and increasingly need help at about the same time as their children were starting their own households and having children. In part, these squeezes were compensated for by relatively small geographical distances between the generations, in a society where co-habitation of multiple generations was not omnipresent. In the 18th century, 80% of the married children with offspring lived in the same location or at walking distance from one of their old parents. Distances increased

during the nineteenth century and the proportion of generations living close to each other decreased.

On average, married couples stayed closer to the parental household of the husband. Widowhood reduced the distance between the two generations, with the exception of the wife's father who did not tend to live closer in the event of widowhood. There seems to be a small birth-order effect as last borns stayed closer to the parental household compared to their oldest brother or sister. Urban couples tended to live closer to their parents than their rural counterparts, though the differences must to some extent be a consequence of the center-based geocoding (which cannot be avoided as our data do not contain specific address information). However, it is likely that this also represents the greater availability of work and marriage opportunities within the confined geographical distance of urban areas.

In today's societies, distance still is an important predictor for intergenerational support as it offers an important 'opportunity structure' to actually exchange physical and emotional care (Hank 2007). Comparing our results with present-day distances between generations, it appears that differences are rather small. Van der Pers & Mulder (2013), for instance, have shown that in today's Dutch society 75% percent of adult children live within 20 kilometers[17] distance from the parental household and around 50 % within 5 kilometers. According to Hank (2007) 88 % of the elderly at age 60-69 have at least one child living within 25 kilometers distance.

Like today, those elderly who lived too far away from their children's household and therefore could not rely on their support had to search for and develop alternative provisions. They had to join the considerable group of elderly couples that had no children at all. In our database 9% of all the couples in the eighteenth and 24 % in the 19th century had no children. Two third of them survived to age 60 and life expectancy at old age did not differ from those couples who did have adult children. They had to compensate the lack of child support with other solutions. The same is true for those remaining single. They could have compensated the lack of time and energy of their 'sandwiched' married siblings by staying at the parental home to take care of old parents. However, in most cases, when they got old themselves they normally could not fall back on children of their own.

From the early modern period onwards, lack of familial support was in the North sea area compensated for by the development of a broad arrange of alternative solutions outside the circle of the family. Partly, these solutions consisted of charitable

[17] With modern transport and communication means, 20 kilometers is considered as living within daily reach (Pers & Mulder 2013).

institutions, such as 'hofjes' and old people's homes or local poor relief systems. Furthermore, the elderly themselves developed alternative strategies to cope with the difficulties of old age and guarantee the necessary care using options provided by the market or the community. They made saving arrangements to buy a place in a 'proveniershouse', hire servants who could provide physical care, rent out living space to lodgers after their own children had left the parental household or arrange care through contractual agreements with non-family members (Boele, Bouman & De Moor 2014). Over time, the use of these external solutions developed into a normal option, as we have argued elsewhere (Boele & De Moor 2017). Even if children were available and lived in the same location, relying on external provisions and institutions was not a strange or shameful solution.

The existence of these external arrangements, of course, did not result in a complete absence of children in the care for old parents and both family care and institutional support could complement each other. Children acted for instance as guarantor for cloths and linen when their old father resided in an old men's home or they asked for better care options of a mother living in a *proveniershuis*, an elderly care home where old men and women paid for their residence (Boele & De Moor 2017). The wide availability of a diverse pallet of options allowed for a lesser dependency of the elderly on their children and contributed to an increase of their agency. As such, the specific residential patterns and developments in the distances between generations had broader implications for choices people made during their life course and the levels of dependency between both generations.

Literature

Adams, John, W., et al (2002). Migration over the life course in XIXth century Netherlands and the America north: a comparative analysis based on genealogies and population registers. Annales de démographie historique 104, 5-27.

Bengtson, V.L. (2001). Beyond the nuclear family. The increasing importance of multigenerational bonds. Journal of Marriage and Family 63, 1-16.

Boele, A., A. Bouman & T. de Moor (2014). 'Commerciële huishoudens? De gevolgen van het Europese huwelijkspatroon en de inzet van niet-familiale hulp als overlevingsstrategie voor ouderen in het vroegmoderne Holland (casus: Leiden)' In: Isabelle Devos, Koen Matthijs & Bart Van de Putte eds. *Kwetsbare groepen in/en historische demografie. - Historisch-demografisch onderzoek in Vlaanderen en Nederland Jaarboek Historische Demografie 2014*, 21-46, Leuven: Acco.

Boele & De Moor (2016). *"Because family and friends got easily weary of taking care".* A new perspective on the specialisation in the elderly care sector in early modern Holland.

Bouman, A., J. Zuijderduijn en T. De Moor (2012). From hardship to benefit: A critical review of the nuclear hardship theory in relation to the emergence of the European Marriage Pattern. Working paper 28. Center for Global Economic History.

Bras, H. & T. van Tilburg (2007). 'Kinship and social networks: a regional analysis of sibling relations in twentieth-century Netherland', Journal of Family History, 32 (3), 296-322.

Castiglioni, M. and G. Dalla-Zuanna (2014). Spread of cohabitation and proximity between Kin in Contemporary Italy. Journal of Family History, 39 (4) 422-444.

Collinson, M., Adazu, K., and White, M., 2009. The Dynamics of Migration, Health and Livelihoods : INDEPTH Network Perspectives. Farnham: Ashgate Publishing Ltd.

Desjardins, B., 1995. Bias in Age at Marriage in Family Reconstitutions: Evidence from French-Canadian Data. Population Studies, 49 (1), 165–169.

Devos, Isabelle, Ariadne Schmidt and Julie De Groot (2016). 'Introduction. Unmarried and Unknown: Urban Men and Women in the Low Countries Since the Early Modern Period'. *Journal of Urban History*, 42(1), 3-20.

Fauve-Chamoux (2002). Widows and their living arrangements in pre-industrial France. The History of the Family, 7 (1), 101-116.

De Haan, H.J. & Hoppenbrouwers, P.C.M. 1998. 'Intergenerational Transfer of Rural Property in the Netherlands. Law, Moral Code and Practice (Sixteenth-Twentieth centuries). Mefrim, 110, 1339-1355.

Gellatly, C., 2015. Reconstructing Historical Populations from Genealogical Data Files. In G. Bloothooft et al., eds. Population Reconstruction. Springer International Publishing, pp. 111–128.

Gellatly, C. Störmer, C. & De Moor, T. Unpublished. Evidence from Europe that adult longevity has been increasing since as early as the seventeenth century.

Hacker, J. D., 2010. Decennial Life Tables for the White Population of the United States, 1790-1900. Historical methods, 43 (2), 45–79.

Hank (2007). Proximity and contacts between older parents and their children: a European comparison. Journal of Marriage and Family 69, 157-173.

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

De Jong Gierveld, J. & C. Tesch-Römer (2012). Loneliness in old age in Eastern and Western European societies. Theoretical perspectives. European Journal of Ageing, 9, 285-295.

Kok, J., & Bras, H. (2008). Clustering and Dispersal of Siblings in the North-Holland Countryside, 1850-1940. *Historical Social Research / Historische Sozialforschung, 33*(3), 278-300.

Kok, Jan, Kees Mandemakers en Bastian Mönkediek (2014). 'Flight from the land? Migration flows of the rural population of the Netherlands, 1850-1940'. *Espace populations sociétés. Les populations Rurales en Europe occidentale du 18ème siècle aux années 1960-1970*, 1, 2-18.

Kok, Jan & Kees Mandemakers (2016). 'Life and death of singles in Dutch Cities, 1850-1940'. *Journal of Urban History* 42(1), 101-120.

Konrad et al (2002)

Knijn and Liefbroer (2006). More kin than kind: instrumental support in families. In: P.A. Dijkstra et al. Family Solidarity in the Netherlands. Amsterdam: Dutch University Press.

Laslett, P, (1988). Family, kinship and collectivity as systems of support in preindustrial Europe: a consideration of the "nuclear hardship" hypothesis. *Continuity and Change* 3 (pp. 153-175)

Van Leeuwen, M.H.D. & James E. Oeppen (1993). Reconstructing the Demographic Regime of Amsterdam 1681-1920. Economic and Social History in the Netherlands 5 (1993) 61-102.

Leopold, Thomas, Ferdinand Geissler, Sebastian Pink. How far do children move? Spatial distances after leaving the parental home. Social Science Research 41 (2012), 991-1002.

Manfredini, M. & M. Breschi (2013). Living arrangements and the Elderly: An analysis of old-age mortality by household structure in Casalguidi, 1819-1859. Demography 50, 1593-1613.

Michielin & Mulder (2007). Geographical distances between adult children and their parents in the Netherlands. Demographic Research 17(22). 655-678.

Michielin, F. C.H. Mulder & A. Zorlu. (2008). Distance to Parents and Geographical Mobility. Population, Space and Place, 14 (4), 327-345.

Mönkediek, B. & H. Bras (2014). Strong and weak family ties revisited: reconsidering European family structures from a network perspective. The History of the Family 19:2, 235-259.

Möring, B. (1996). Marriage and social change in western Finland 1700-1870. Continuity and Change 11, 91-113.

Möring, B. (2010) Rural widows, economy and co-residence in the 18th and 19th centuries. The History of the Family 15, 239-254.

Mulder & Kalmijn (2006). Geographical distances between family members. In: P.A. Dykstra et al. Family Solidarity in the Netherlands.

Noordam, D.J. (1975). 'De weerbare mannen van Maasland in 1747. Een historisch-demografisch onderzoek', in *Holland*, 7, 1975, pp. 36-42

Ottaway, S.R. (2004). *The Decline of Life: Old Age in Eighteenth-century England*. Cambridge: Cambridge University Press

Paping, Richard. General Dutch population development 1400-1850: cities and countryside. Paper to be presented at the First Conference of the European Society of Historical Demography (ESHD), Sassari/Alghero, Sardinia, Italy September 25-27, 2014.

Pers, van der & Clara H. Mulder (2013). The regional dimension of intergenerational proximity in the Netherlands. Population, Space and Place 19, 505-521.

Plakans, A. & C. Wetherell (2003). 'Households and kinship networks. The costs and benefits of contextualization', Continuity and Change, 18, 49-76.

Reher, D.S. (1998). Family Ties in Western Europe: Persistent Contrasts. *Population and Development Review* 24 (2), 203-234

Robin, J. (1984). Family care of the elderly in a nineteenth century Devonshire parish. Ageing and Society 4, 505-516.

Ruggles, S. (1986). 'Availability of Kin and the Demography of Historical Family Structure', Historical Methods, 19, 93-102.

Ruggles, S., 1992. Migration, marriage, and mortality: correcting sources of bias in English family reconstitutions. Population studies, 46 (3), 507–22.

Ruggles (2003). Multigenerational families in nineteenth century America. Continuity and Change, 18 (1), 139-165.

Ruggles (2011). Intergenerational Coresidence and Family Transitions in the United States, 1850-1880. Journal of Marriage and Family 73 (1), 138-148.

Schuurman, A.J. (1979). 'De bevolking van Duiven 1665-1795. Een historisch-demografische studie', in *A.A.G. Bijdragen*, 22, pp. 168-174.

Smith, J.E. and J. Oeppen (1993). 'Estimating numbers of kin in historical England using demographic Microsimulation'. In: Old and new methods in historical demography. Oxford: Clarendon Press, 280-317.

Sovic, Thane & Viazzo (2016). The history of families and households. Comparative European Dimensions. Brill.

Vries, de, Jan (1984). European urbanization 1500-1800. London: Metheun.

Wall (1992). Relationships between generations in British families past and present. In: C. Marsh & S. Arber eds. Families and households, divisions and change, 139-156, London: Macmillan.

Wall (2002). Elderly widows and widowers and their co-residence in late 19th and early 20th century England and Wales. The history of the family 7, 139-156.

Wall, R. (2010). Economic collaboration of family members within and beyond households in English society, 1600-2000. Continuity and Change 25 (1), 83-108.

Wing Chan & Ermisch (2014). Family Geography and Family Demography in Contemporary UK.

Appendix 1

Regional distribution of cases compared to population figures

Province		N	Percentage	De Vries & Van der Woude 1997, 1795
Drenthe	1750-1799	687	2.85	1.9
	1800-1849	4375	3.80	
Friesland	1750-1799	1953	8.12	7.8
	1800-1849	9490	8.23	
Gelderland	1750-1799	3282	13.64	10.7
	1800-1849	18258	15.84	
Groningen	1750-1799	2498	10.38	5.5
	1800-1849	10628	9.22	
Limburg	1750-1799	549	2.28	6.6
	1800-1849	2583	2.24	
Overijssel	1750-1799	1105	4.59	6.5
	1800-1849	6421	5.57	
Utrecht	1750-1799	1198	4.98	4.7
	1800-1849	6894	5.98	
Zeeland	1750-1799	1800	7.48	5.5
	1800-1849	8359	7.25	
Holland	1750-1799	8618	35.81	38.2
	1800-1849	38687	33.56	