

# **Living with kin in the Netherlands: Long-term trends, variability and effects on longevity<sup>1</sup>**

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## **Abstract**

The number and characteristics of the family members with whom children grow up directly influence the life courses of children and the resources available to them. Social and demographic processes have caused revolutionary changes in the number of parents, grandparents and siblings with whom children lived. In this project we will analyze the changes in the living arrangements of children born during the period between 1850 and 1985 in the Netherlands, making use of two innovative, very complex data sets. For children born during the period between 1850 and 1922 we make use of a prospective cohort study, based on data from continuous population registers, in which individuals can be followed in the household in which they were living on a day-by-day basis. These data come from ‘The Historical Sample of the Population of the Netherlands’ (HSN; N=7,325) for three Dutch provinces. For cohorts born between 1923 and 1985 we use data from a retrospective study on living arrangements: ‘The Netherlands Kinship Panel Study’ (NKPS; N=8,154). Both data sets include information on the socio-economic status of the families.

In this paper we first describe the changes in the living arrangements of children born in the Netherlands between 1850 and the end of the 20<sup>th</sup> century until the age of 15, regarding parental and household structure. We are able to depict the social variation in the life course trajectories of children from different social classes and the way in which changes can be linked to the demographic transitions taking place in the Netherlands.

We use Cox regression models to estimate the long term consequences of different living arrangements in childhood on survival in adulthood of birth cohorts born between 1850 and 1922.

## **Living arrangements of children: The necessity of a long-time perspective**

The second demographic transition brought about a revolutionary transformation of the European family from the middle of the 1960s on. The move away from marriage and parenthood and the increasing popularity of cohabitation and out-of-wedlock fertility had major consequences for family size, structure and composition.<sup>4</sup> In just one generation the number of siblings with which children grew up decreased and the nuclear family—composed of both married parents and a restricted number of their biological children—lost its role as the characteristic living arrangement of children. The variation in how people organize their family life nowadays seems to be greater than it ever was in any period before.

These changes in Western family patterns generated popular and scholarly concern over their impact on children. Researchers were led to consider the implications of changing family structure with regard to a variety of outcomes for children: schooling, income, occupational attainment, and familial and reproductive characteristics. Recent studies have linked living arrangements of children to such later-life outcomes as out-of-wedlock fertility, premarital cohabitation, age at marriage, marital dissolution, and adult and old-age mortality (Albrecht & Teachman, 2003; Hansagi, Brandt, & Andréasson, 2000; Modin, 2003; Preston, 1998; Teachman, 2004).

In the debates over the consequences for children of growing up in a specific living arrangement the complexity and instability of the contemporary family is opposed against the happy family of father and mother living together with a moderate number of their biological children. This type of family was itself the result of revolutionary demographic changes that took place from the middle of the nineteenth century on. This model of family life owed its existence in particular to the sharp drop in mortality and fertility that took place between the last quarter of the nineteenth century and the beginning of World War II. High numbers of siblings, high proportions of lone parents and a high frequency of broken marriages, the essential characteristics of the pre-transition regime, gave way to ‘the’ model of family life, the nuclear family.

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<sup>4</sup> Dutch data can illustrate these tendencies. Women marrying for the first time did that at age 23.5 in 1965 and at age 29.0 in 2000. The divorce rates rose from 77.0 per 1000 contracted marriages in 1965 to 392.0 in 2000 and whereas in 1965 1.8 percent of all children was born out of wedlock, this percentage was 24.9 in 2000. Cohabiting couples made up 5.3 percent of all (married and cohabiting) couples in 1980 and 16.0 percent in 2000. The average number of children per woman decreased from 3.04 in 1965 to 1.56 in 2000.

The new era of familial instability that in many western countries was entered after the mid-1960s confronted children born in the 1970s and 1980s with a degree of family instability and family complexity that called to mind the experiences of their great-grandparents when these were young. Until the cohorts born early in the twentieth century, family disruption due to high mortality and remarriages following the loss of a spouse were very common. A complex family structure in which children were co-residing with stepparents and stepsiblings and were affiliated with three different families was the result (see the contributions in: Dupâquier, Helin, Laslett, Livi-Bacci, & Sogner, 1981). Lone parenthood and cohabitation outside marriage were not unusual either. In the 19<sup>th</sup> century, many people from the working class preferred to form a household without marrying (see, e.g. Berlanstein, 1980; see, e.g. Matovic, 1990) and until 1880 high proportions of children in large cities were born out-of-wedlock (Shorter, 1971).

According to the French historian Martine Segalen, people have ‘completely lost the idea of what those instable families were, those unions formed and rapidly broken by death, those households in which children from different unions had to learn to live together or had to step aside when a new child was born’ (Segalen, 1981, p. 75).<sup>5</sup> Studies focusing on the changes in living arrangements of children have rarely tried to analyze the consequences of the first and the second demographic transitions at the same time. Various historical studies have portrayed the changes in childhood attributable to the demographic changes taking place in Western Europe during the period 1800-1900, be it that these overviews were as a rule based on restricted and imperfect data (exception made for Neven, 2003). Many contemporary studies only focus on the fundamental transformation taking place from the 1970s or 1980s on (Andersson, 2002; Hernandez & Myers, 1993; Heuveline & Timberlake, 2002; Hofferth, 1985; Villeneuve-Gokalp, 1994). Hernandez and Myers {, 1993 #5} is one of the few exceptions. We therefore lack perspective on the change on the longer term as a whole.

An understanding of how the current circumstances of children came about is not possible without examining earlier historical change. The elements that are new in the

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<sup>5</sup> The demographic transformations that occurred can again be illustrated with data from the Netherlands. The average number of children per woman, that stood as 5.57 in 1879 declined to 2.57 in 1937. This decline in the number of siblings was counterbalanced by the decline in childhood mortality: whereas in 1850 only 67 out of 100 new-born girls survived until age 15, in 1939 this had increased to 95 per 100. The percentage of children born out-of-wedlock decreased from 4.7 percent to 1.3 per 100. The decrease in adult mortality led to an increase in the age at which the dissolution of marriage occurred. Women who had reached age 25 had in 1850 52 percent chance to survive to age 65: in 1939 this was 76 percent. This decrease was not compensated for by the rising divorce rates: 3.5 per 1000 contracted marriages in 1850, versus 61.6 per 1000 in 1939.

present-day living arrangements of children, those that imply a change in nature and those that are comparable with earlier family situations can only be identified in a longer time-perspective. Many statements about change in family composition and structure are only based on a comparison of the present-day situation and assumptions about the past that have no basis in social reality. An understanding of how the present living arrangements have developed makes it necessary to follow a more historical approach to the realities of living arrangements and their demographic basis.

A historical perspective is also necessary to improve our understanding of the consequences for children of growing up in specific living arrangements. When a restricted time perspective is used, possible changes over time in the importance of specific living arrangements during childhood, or in the relative importance of background characteristics such as social class, for later life outcomes of children cannot accurately be studied. In most western countries, processes of modernization, industrialization and urbanization since the middle of the nineteenth century have been paralleled by an enormous change in the role that family members played. In particular the increase in the role mothers played compared to fathers in rearing their children, and the decreasing importance of the role of the family in comparison to that of state and school have to be mentioned here (Janssens, 1997). These processes might have changed the relative importance of fathers and mothers for later-life outcomes of children and may have affected the long-term impact of socioeconomic position at the time of birth. Only in a wide time perspective can these transformations be studied.

The purpose of this paper is twofold. First and foremost is that we want to help fill the gap that exists in our historical knowledge of the changing living arrangements of children. This will be done by analyzing data from two different sources that together cover the changes in living arrangements of children in the Netherlands, born between from 1850 and 1985. The second goal is to study the effect of living arrangements of children on later life outcomes in a historical perspective. In this paper that will be done by studying the effect of being raised in various living arrangements on longevity at adult ages.

The two datasets that we use have in common that they allow for a child-centered life-course perspective on trends in living arrangements and for a day-by-day observation of the type, number and characteristics of persons with which the child is living during the first stage of his life. A third point in common is that both datasets make it possible to study whether there are any differences between social classes in living arrangements of

children. Mortality, extra-marital and marital fertility, marriage, and divorce have always been characterized by variation between social groups and living arrangements are profoundly affected by residence decisions based on economic and cultural considerations such as family economies, inheritance systems and social norms. Both factors will have led to a large degree of variation in family situations between social classes, and it is advisable to take this account if one wishes to offer a realistic picture of living arrangements of children.

Only one of the datasets allows us to study the effects on survival in later life of the living arrangements in which children spent the first years of their life.

We begin with a discussion of the problems related to the frequently-used historical data on living arrangements: in many countries studies have started in which the present-day different living arrangements of children are examined, and it is mainly the paucity and low quality of historical data that limits the potential of comparative research on these issues. Next we describe the specific historical source that we intend to use - the population registers for the Netherlands – in more detail. In the following step we discuss the larger framework in which our historical study fits and the contemporary datasets that we will use. The presentation of the results is limited to a series of figures, describing the changes over time in the co-residence of children and parents, the social class differences in co-residence, and the changes over time in the presence of other kin and non-kin in the households in which children grew up. In a final chapter we study the effects on longevity of the various living arrangements.

In our opinion the transformations in living arrangements that the Netherlands underwent during the period studied here might be considered exemplary for the changes that characterized other countries in Western and Northern Europe. During the first and the second demographic transition the same demographic processes were visible here and only the date at which this demographic transformation started and the speed with which it took place differ from those in other countries.

### **Problems in studying living arrangements of children in historical studies**

The most serious problem facing the study of historical living arrangements is the lack of suitable data sources. Given the focus on the co-residence of individuals within a family or household, it is clear that the principal source for historical studies is the census. Census listings might, at the individual or at the aggregated level, detail the ages,

relationships to the head of the household unit, marital statuses, and ages of the family or household members. There are two main problems in using census listings. First of all, in many census listings it is difficult to use the individual and his co-residential experience as the unit of analysis: only the family or the household can be used as such. Censuses make it possible to describe the composition of the households but they do not bring to light the kin relationships which exist between children and adults present in the household. Children who are part of a reconstituted family for example can not be distinguished from those being a child of the new couple. The census listings do not give information about the position of individuals within a family, their co-residence with relatives of a particular type, and the availability of kin (King, 1990). Using the family as the unit of analysis makes it difficult to study changes over time: families can divide and merge, and there is no way to tell when one family ceases and the next one begins its existence (Kertzer, 1985, p. 100-103; Ruggles, 1990).

A serious shortcoming of a census listing is also that it is a cross-section and gives a static picture of households and families. The household observed at a given moment in time may simply be a phase in the developmental cycle of a single family organization. There may be a normal series of stages that appear only rarely in a population because they last for only a short period of the family's cycle or they do not appear at all (Berkner, 1972, p. 405). When the family structure is measured at a single point in time in the child's life, information on family structure transitions that children experience while growing up gets lost. The cross-sectional approach thus misses the essential processes that produce the particular manifestation of the household or the family that is presented by the census and cannot show the sequence of events that children are witnessing.

In an attempt to break away from the static approach and to provide a life-course interpretation of cross-sectional data, some scholars have employed a synthetic cohort approach. This method, which was first introduced by Lutz Berkner (1972) uses cross-sectional data classified by age to determine the individual's co-residential experiences in a life-cycle format. Various authors have pointed out that it is impossible to translate the results of a cross-sectional analysis directly into longitudinal language (Watkins, 1980). Use of this synthetic cohort method entails the a-historical assumption that there is no significant change in household processes, at least over the course of a few decades (Kertzer, 1985).

Other historians have attempted to follow households over two censuses, separated by a number of years. This approach represents an improvement over studies based on a single enumeration; in particular if the intercensal periods are relatively short, for example in using yearly censuses. This type of record linkage is not only very time-consuming, it also has problematic aspects. Kertzer (1985) argues that, by focusing on households as the basic longitudinal unit of analysis, an arbitrary and potentially misleading portrait of people's co-residing experiences over their life course is drawn. The focus is on the continuity of the household, which is said to be the same over time, despite the fact that many of the individuals who live in the household may move in and out of a variety of household units during the same period. Furthermore, when before and after measures are provided for household units that are traced over a period, systematic bias is introduced by the exclusion of those who live in households which cannot be traced.

To solve the problems related to the use of cross-sectional data or to overcome the lack of historical data on family and living arrangements, demographers and historians have also turned to theoretical models. Basically, what a theoretical model does is to describe family composition as the outcome of demographic events. Once demographic behavior is specified, the resulting family relations can be studied, either analytically (Goodman, Keyfitz, & Pullum, 1974; Pullum, 1982) or through macro-or micro-simulation. In particular *micro simulation* models have become popular (Smith & Oeppen, 1993; Smith, 2000). For various reasons, these theoretical models are not very well suited to inform us on the living arrangements of children. First of all, almost all of these models include only demographic parameters. Demographic conditions determine the number and characteristics of kin available for co-residence, provide the context within which residence decisions are made but do not in themselves offer information on co-residence (Ruggles, 1986). Watkins, Menken, & Bongaarts (1987) for example studied how long-term demographic changes have affected the conjugal family (married couples and their children) using a macro-simulation model. They did not make a distinction between co-residing and non-co-residing children. The same applied to Zhao's (1996) study in which he applied micro-simulation to study the effect of the demographic transition in Victorian England on kinship networks. In order to construct family structures historians would need to know the probabilities of transition into or out of families and historical sources do not ordinarily provide this kind of information.

The major drawback of the theoretical models is that they are abstractions from

reality and cannot be used as a substitute for empirical data. If data on living arrangements are obtained by some observational method, it reflects the actual constellation of a person's family situation as it exists in the real world: all the factors which determine the living arrangements are effectively 'taken into account'. Factors operating in a real historical population are inevitably far more complicated than a simulation system can take account of. That has first of all to do with the fact that several models relate to populations in which demographic parameters do not change over time. In some cases, 'change' is introduced by comparing outcomes of simulations, based on different sets of assumptions, each set representing a particular historical situation. Cases in point are the studies by Watkins, Menken & Bongaarts (1987) in which family statuses were compared for cohorts assumed to live out their lives under the demographic conditions of 1800, of 1900, of 1960, and of 1980, and the study by Zhao (1996) who compared a pre- and a post-transition birth cohort (1851-1855 and 1901-1905, respectively). To obtain more realistic models, the assumption of stability has to be weakened by introducing different sets of probabilities for different generations. Attempts in this direction usually lead to unwieldy models, containing many ad hoc assumptions, which are impossible to verify and replicate (Smith, 1987). Problems also arise because of the fact that model builders, because of scanty data, are forced to introduce simplifying assumptions about demographic processes, particularly for the pre-1900 period (Watkins et al., 1987). Simulation outputs therefore are not equivalent to the outcomes of empirical studies. Changes in living arrangements observed in a real population are caused by many complicated factors, while those generated by the simulation are only the result of the variables which are incorporated into the simulation system.

Van de Walle (1976) had already drawn the attention of scholars to a hitherto neglected data source- the population registers as they exist in Belgium, the Netherlands and parts of Italy - which make it possible to overcome many of the problems discussed above. Population registers combine census listings with vital registration in an already linked format for the entire population of a municipality. Yet there is much more information in the population registers than in the censuses and vital registration considered separately. The additional information comes from the linkage of information from the census to the demographic events and from the linkage of events occurring in the life of each individual in the population registers (Alter, 1988).

The advantage of data from population registers is that they make it possible to focus not so much on types of households but on individuals within living arrangements. Living arrangements are viewed from the perspective of an individual and they are classified according to the individual's role in it. They enable one to unravel the dynamics of family life and the underlying processes producing the various types of living arrangements. The effect of migration, mortality, birth and marriage on co-residential behavior can clearly be seen; the data will tell us how the co-residence has come about, as a result of kin moving into or remaining within the household or whether the experience is different.

Population registers allow us to take into account various contextual factors—economic, social and cultural – at the level of a single community. By linking a series of registers over time, the co-residential experiences of an individual can in principle be followed for a long period of time and can be related to changing historical situations (Janssens, 1993, p. 50-51). In many cases the linkage of consecutive population registers of the same community to create complete life histories might result in unrepresentative samples. This is caused by the fact that in this case only people are studied that are geographically stable and the behavior of the stable families may have differed in undetectable ways from the more mobile part of the population (Alter, 1988).

Although the depth of information is usually much less, in other respects the data from the historical population registers can be compared with the longitudinal or panel household data that during the past two decades have enabled sociologists and demographers to conduct studies that focus on children and the wide range of relationships linking them to their families and to society as a whole.

### **The Dutch population registers: qualities and shortcomings**

Continuous population registers in the sense of bound documents with non-removable pages were enforced in the Netherlands by the Royal Decree of December 22, 1849. The registers had to record the population legally residing within the municipality. From 1861 on, the registers recorded the *de facto* population. In most municipalities, population registers remained in use until 1910 or 1920, after which date a new form of continuous registration was introduced, consisting of loose sheets, so-called *gezinskaarten* or family cards. The registration unit was then no longer the household, but the family. From 1939 on, the individual person became the registration unit in all municipalities. Since then, the

population register in each municipality consisted of a collection of personal cards, containing nearly the same information as the population register.

Starting point for the first registers was the census of 1849. The returns from this census were copied into the population register, and from then on all changes occurring in the population in the next decade were recorded in the register. In most municipalities, this procedure was repeated with each subsequent 10-year census, so that in principle every register covers a time span of ten years between the censuses. Each household was entered on a double page, with the head of the household first; he was followed by his wife (in case the head was a married male), children, relatives, and other members of the household. For each individual, date and place of birth, relation to the head of the household, sex, marital status, occupation, and religion were recorded. New household members arriving after the registration had started were added to the list of individuals already recorded, and those moving out by death or migration were deleted with reference to place and date of migration or date of death. Residents were required by law to report migration between communes at both the origin and destination. The registers thus present information on demographic events leading to changes in composition and size of households, including the characteristics of the person undergoing that event.

Of course the registration system in particular during the nineteenth century has also shortcomings. Some of these are intrinsic to the system of registration, whereas other shortcomings were due to accidental factors. In discussing these shortcomings we follow the overview given by Janssens (1993, p. 60-66). Useful discussions can also be found in Knotter and Meijer (1995), Meijer (1983) and Vulsma (2002).

In general one might say that the population registers were fairly accurate in reporting demographic events such as births, deaths and marriages, but were less accurate in reporting migration. This had consequences for various kinds of moves. Internal migration in the municipality as far as movements of households between addresses is concerned is under-recorded. Individuals moving between households were normally accurately recorded although in the final years of some registers some unrecorded cases could be detected. Internal migration of individuals resulting from a marriage and the establishment of a new household were usually accurately recorded, including the date. Internal migrations of individuals that were not accompanied by demographic events were registered but without reference to a date, so that the timing of the move sometimes had to be inferred from other entries on the page.

A further problem is the under-registration of new arrivals as well as of people

moving out either by death or by migration. The problem is most urgent in the case of the more transient segments of the population, such as children leaving the parental home to become servants or to go to boarding school. These kinds of under-registration usually are identified when children have disappeared at the start of a new register or turn up in another household without having been crossed out in the parental household. Underreporting of co-residing extended kin members will also have taken place.

There are also problems that are related to the core issue that we want to study, the characteristics of the living arrangements in which the child grew up. A first problem is that whereas the older system of recording used a page for each address and the reconstitution of the household is explicit in the records themselves, in the post-1913 system families are defined quite narrowly, to consist of solitary, simple family units—married couple alone or with unmarried children (Gordon, 1989). Extended families certainly existed after that date as well but the members appear on different cards. Thus, not all that resident at a particular address will appear on one *gezinskaart*. A second problem is related to the fact that in the pre-1913 population registers, a household is defined as the set of individuals that in the register is distinguished as a separate entity, identifiable for example by a separate numeration. Easy as this might seem, in practice this could be rather complicated. It is difficult to determine what rules were followed, who was left out, and what criteria were used to make the divisions into block. Common residence is the crucial criterion. A more practical problem is that at the moment the register started, all households were entered on a separate page, but as time went on, this rule was no longer applied in all municipalities. As a consequence, it is sometimes difficult to identify which members belong to which household at each moment of time. Blank lines were normally used to separate for example lodgers or servants from the rest of a household and to distinguish the different households on the same page. These borderlines were however not always used consistently: when households expanded the blank lines disappeared and with them the boundaries between the households. When at the end of the page no line was left, the clerks did not hesitate to fill up the blank lines somewhere else on the page.

It would be an illusion to think that the information given in the registers is always accurate. In the first register, covering the period 1850-1859 a separate column stating the relationship of individuals to the head of the household is not included. However, inferences about the most likely relationship to the head of the household are in almost all cases relatively easy to make on the basis of such characteristics as order of registration, sex, and

name and age. In case of need, recourse can be made to the vital registration system (registration of births, deaths, and marriages). Nonetheless, it is possible that some more distant kin members living in the household may have been passed off falsely as servants. There is also the problem of the lack of accuracy in the registration of occupations. Occupations were, usually only recorded upon entry in the registers but were not updated, and the categories used were vague. The wife's occupation was recorded only occasionally, while occupations of children were registered erratic. Finally, the registration system is not complete. Some persons left their place of residence without a correct registration of their place of destination, many people left the Netherlands making it very hard to follow them in their new country of destination and a problem is also that in several municipalities (parts of) the population registers have not survived. That applies for example to the cities of Middelburg and Arnhem where in WW II the registers for the period 1850-1900 were destroyed. Although in these cases the complete reconstruction of the life course is problematic, by working backwards in time useful information about the individuals concerned can be collected. First of all, for those persons who had died after 1939, the life course could be reconstructed retrospectively from either the personal card or from the extract of the Municipal Basic Administration.<sup>6</sup> Both sources contained retrospective information that made it in many cases possible to study the life course backwards in time. Secondly, consultation of the vital registration system very often gave information on the place and date of death, the place and date of marriage of the person concerned or the place and date of birth of children of the person. In these cases as well, for those people who could not be traced in the population registers, part of the life course could be reconstructed backwards.<sup>7</sup> A specific problem relates to children dying very soon after their birth.

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<sup>6</sup> Since 1939, the population register in each municipality consisted of a collection of personal cards, containing nearly the same information as the population register. All persons who were alive in 1939 or were born after that year received a Personal Card. At the moment of death, this card is removed from the files and sent to the Central Bureau of Statistics, and later on sent to the Central Genealogical Bureau. Personal cards of all persons who died between the 1st of January 1940 and the 30th of September 1994 are available for research. For persons who died after that date, extracts from the so-called *Gemeentelijke Basis Administratie* (GBA: Municipal Basic Administration) can be collected at the Central Genealogical Bureau, containing almost the same information. The Municipal Basic Registration contains personal data of all persons living in The Netherlands.

<sup>7</sup> More and more electronic databases with information on death and marriage records from the vital registration system have been placed on the Web. *Genlias*, a joint initiative by a number of public archives in the Netherlands, is a national database that allows one to search the data from the open vital registers for the Netherlands. Ultimately *Genlias* will contain information on deaths and marriages for the periods 1812-1952, respectively 1812-1922 and births for the period 1812-1902. Complete (or almost complete) series of marriages are already placed on the Web for all Dutch provinces with the exception of Zuid-Holland and Noord-Holland (although for these provinces as well data in electronic databases are available for various cities and regions). For Friesland and Zeeland, death registers are also completely available, for Utrecht

Although in principle all live born children had to be entered in the population registers, several children dying very soon after birth actually were not registered. A check on the registration of births in the population register against the birth registers for the city of Tilburg indicated that in normal times at the most 0.2% of all births occurring within a decade were not entered in the population register, all cases concerning children dying soon after birth (Janssens, 1993-63). The consequence is that when these children are part of the study they cannot be traced in the register whereas when it relates to a brother or sister dying soon the number of kin co-residing with the selected individual is underestimated.

### **Historical Sample of the Netherlands (HSN)**

The historical data on living arrangements of children that we use here were collected for the so-called Historical Sample of the Netherlands (HSN). The aim of this project is to build a national database with information on the complete life history of a 0.5 percent random sample (76,700 birth records) of men and women born in the Netherlands between 1812 (the introduction of the vital registration system) and 1922. In all Dutch provinces a random sample of births was drawn which was stratified by period of birth (11 periods) and level of urbanization of the municipality (Mandemakers, 2001). The selected individuals will be followed in the consecutive population registers, and, in case of migration, in the population register of the new place of residence, till death or to the present-day if still alive.

Only a selection of data from the HSN-database will be used for this project. The study is restricted to three of the eleven Dutch provinces – Zeeland, Utrecht and Friesland- and to children born between 1850 and 1922, giving a total of 7,325 births rather evenly distributed over the three areas. The persons in the HSN-sample were born in 254 different municipalities but as many of them spent part of their childhood in another municipality than their municipality of birth the total number of municipalities in our study for which we used the population registers is much higher. The restriction to cohorts born in the period 1850-1922 is motivated by the fact that information on the family structure during childhood can only be collected by using the population register, available from 1850 on.<sup>8</sup>

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almost completely. Parts of the mortality data for the provinces of Overijssel, Drenthe, and Limburg have been placed on the Web as well.

<sup>8</sup> The data collection for the province of Zeeland was at the time of writing of this paper almost complete; for Utrecht, around 80 percent of the data was available, for Friesland around 50 percent.

The selection of the provinces is mainly based on the fact that in these three provinces the collection of information has progressed most.

*Here Map 1 location of the research area*

Zeeland in the Southwest consists of a strip of the Flanders mainland, bordering to Belgium and six former islands. All of these are now connected to each other or to the inland provinces of Noord-Brabant and Zuid-Holland by dams and bridges. Zeeland was for a long time a rural area of which the towns of Middelburg and Vlissingen, with respectively 16,000 and 10,000 inhabitants in 1850, were the administrative and industrial centers. In 1930 their population size had only increased to 18,000 and 22,000. Sea-clay grain-farming was the dominant economic activity (60 percent of the labor force was involved in agriculture). Part of the population was involved in the fishing industry. In the second half of the nineteenth century agricultural modernization was eroding the position of the farm laborers (Priester, 1998; Wintle, 1985). The economy of the region started to change after 1900 when industrialization took place. Tourism developed on a small scale from that time on, gaining importance after WW II.

Utrecht, located in the center of the country, had as its most important towns Amersfoort (with 12,000 inhabitants in 1850 and 38,000 in 1930) and the capital city of Utrecht, which grew from 48,000 inhabitants in 1850 to 155,000 in 1930. The latter city was an industrial center as well as an important garrison-town and a center of trade and services. In the rest of the province, agricultural employment dominated. In the eastern part of the province production was to a large extent destined for home consumption. After 1850, dairy farming expanded, and contacts with the market intensified. Commercial dairy farming dominated on the low-peat and sea-clay areas in the western part of the province.

Friesland, in the northeastern part of the country, includes several of the West Frisian Islands along the North Sea coast and borders on the IJsselmeer (formerly Zuyderzee) in the west. Friesland also was a mainly rural province, the only larger town being Leeuwarden, with around 24,000 inhabitants in 1850 and 49,000 in 1930. The relatively prosperous agricultural economy (dairying and cattle-raising) was strongly commercialized. Like Zeeland, it was heavily affected by the agrarian depression, leading to very high emigration in the period 1881-1915 (Frieswijk, 1998; Galema, 1996). Industrial breakthrough began in the early 1880s.

All three provinces were rather small in surface area and population size. The number of inhabitants of Utrecht increased from 151,000 in 1850 to 410,000 in 1930; Zeeland's population increased from 161,000 in 1850 to 248,000 in 1930; Friesland's population size was 251,000 in 1850 and 403,000 in 1930.

As far as demographic factors effecting the living arrangements of children is concerned, the selected provinces were heterogeneous enough to make them an interesting subject for comparative research. At the same time, the figures for the country show that they might be considered more or less representative for the demographic regime of the Netherlands as a whole. Table 1 gives for three periods an overview of the differences between the provinces in mortality before age 15, mortality in adulthood, fertility, extra-marital fertility and divorce.<sup>9</sup>

*Here Table 1*

Fertility was high everywhere around 1850 but in 1900 the fertility decline was already well under way in Friesland whereas Utrecht lagged far behind. Extra-marital fertility, although at a rather low level, also showed regional contrasts at least until 1900. Marital breakdown by divorce was a rare event around the middle of the nineteenth century and here regional differences became visible only around 1930. The largest differences were observed in childhood and adulthood mortality: in both age ranges Zeeland had in the nineteenth century much higher mortality risks.

### **Netherlands Kinship Panel Study (NKPS)**

The data that are available on the living arrangements of children born after 1922 are derived from the main sample of the Netherlands Kinship Panel Study (NKPS) (Dykstra et al., 2000), which is a random sample of more than 8,000 individuals within all Dutch households. The response rate is 45%, which is about average for the Netherlands (Dykstra et al., 2004). All respondents are between 18 and 79 years old. Residents of care institutions, penitentiaries, homes for the elderly, and holiday homes are excluded from

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<sup>9</sup> Data were derived from a variety of published and unpublished sources. Due to changes in availability of data, they do not all refer to exactly the same period. Values of death rates refer respectively to 1850-1859, 1901-1902 and 1928-1930; other demographic indicators were calculated for 1848-1850, 1899-1901 and 1929-1931.

the sample frame. About 1% of all Dutch men and 1.7% of all Dutch women live in one of these institutions (Statline, 2004). The general data collection procedure among the main respondent's – the *anchors* - involved the following steps. First the interviewer mailed an introductory letter. A day or two after sending the letter, the interviewer contacted the addressee to make an appointment for an interview. The interview was to be conducted in the main respondent's home, but if the respondent preferred to be interviewed elsewhere, this option was provided. In the face-to-face interview the respondent was questioned about the anchor's life course and actual living situation, and on the relationship with family members, the so-called 'alters'.<sup>10</sup>

In this paper we focus on retrospective information on the childhood of the main respondent, which depicts, as is the case in the HSN dataset, his or her successive living arrangements during the first 15 years since birth. With the help of other information, such as the birth dates of all siblings, the year of death, divorce or remarriage of the biological parents, or the moving into the household of stepfamily, we can enrich the data with all significant events taken place during childhood. The weighted data convert the random sample of households into an representative sample of all individuals in the Netherlands (Dykstra et al., 2000).

Retrospective data suffer from several limitations, compared to prospective data, for example, recall problems and selection effects. Regarding the former however, studies have shown that retrospectively collected factual data like fertility histories, family characteristics, and employment careers are to a reasonable degree accurate (Blossfeld & Rohwer, 1995). Another disadvantage of retrospective studies is that by definition they are based on survivors only. Those individuals who have died or migrated are excluded and biases will arise if it relates to the studied process and this selection effect is the strongest in the older NKPS cohorts.

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<sup>10</sup> Alters might include (a) the current partner, (b) both living biological parents, (c) at the most two randomly selected biological children, (d) at the most two randomly selected siblings, (e) one randomly selected friend and (f) parent-in-law (max. 9 persons). A self-completion questionnaire was handed to the anchor at the end of the interview. The interviewer was responsible for collecting the completed questionnaire and returning it to the fieldwork agency. The interviewer filled in an evaluation form after the interview. A maximum of five alters aged 14 years or over were asked, with permission of the anchor, to fill in a questionnaire on their relationship with the anchor. Alters were (a) the current partner (response rate 71%), (b) one of the two selected parents (response rate 39%), (c) both selected children (response rate 48%) and (d) one of the two selected siblings (response rate 36%). The written questionnaire contains other questions for example on the relationship with the alters' own parents and about attitudes towards and perceptions of the family and family related issues.

## Social class categorization

The relation between social class and living arrangement is a key aspect of this study. We used a different procedure to classify individuals in the two studies. For the HSN we only had data on the profession of the father of the child at the time of birth. To classify the occupational data of the HSN we used a recently developed coding scheme called HISCO (*Historical International Standard Classification of Occupations*) (Van Leeuwen, Maas, & Miles, 2002). HISCO translates occupational descriptions covering a long historical time, various languages and countries in a common code, compatible with the International Labour Organisation's *International Standard Classification of Occupations* (ISCO68) scheme. These historical occupational titles were classified into a social class scheme recently proposed by Van Leeuwen and Maas (2005).<sup>11</sup> Van Leeuwen and Maas called their classification scheme HISCLASS. It is based on a linking of HISCO codes to the so-called Dictionary of Occupational Titles (DOT), a classification system in which for more than 35 thousand occupational titles information is given on the nature of work (working conditions, work performed and industry), and the demands of the work in terms of training time, aptitudes, interests, temperaments and physical demands. The characteristics of the HISCO codes, as present in the DOT were then classified by experts into 12 classes, cross-validated with other class schemes and their predictive validity was tested. We classified all municipalities as urban or rural (depending on the number of inhabitants, population density and proportions working in agriculture in 1889) and used this in the translation from HISCO to HISCLASS.<sup>12</sup> Twelve classes are distinguished: Higher managers, Higher professionals, Lower managers, Lower professionals and clerical and sales personnel, Lower clerical and sales personnel, Foremen, Skilled workers, Farmers, Lower skilled workers, Lower skilled farm workers, Unskilled workers and Unskilled farm workers. In many cases it was hard to distinguish between

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<sup>11</sup> We wish to thank Dr. Andrew Miles (University of Birmingham) and Dr. Bart van de Putte (University of Louvain) for invaluable help with the coding of the occupational titles. Dr. Marco van Leeuwen (International Institute for Social History, Amsterdam) and Dr. Ineke Maas (Utrecht University) put the basic coding list of HISCO and HISCLASS to our disposal.

<sup>12</sup> These include Amersfoort, IJsselstein, Montfoort, Oudewater, Utrecht, Wijk bij Duurstede in Utrecht, Bolsward, Dokkum, Franeker, Harlingen, Hindeloopen, IJlst, Leeuwarden, Sloten, Sneek, Stavoren, Workum in Friesland en Aardenburg, Goes, Hulst, Middelburg, Sluis, Terneuzen, Veere, Vlissingen en Zierikzee in Zeeland.

farm workers and workers outside agriculture as both groups were just called *Arbeiders* (laborers). Parents who had *arbeider* as occupational title and were living in urban areas were classified as Lower skilled workers, parents living in rural areas as Lower skilled farm workers.

For this analysis we summarized Higher managers, Higher professionals, Lower managers in '*High*', Lower professionals and clerical and sales personnel, Lower clerical and sales personnel and Foremen in '*Middle*', Farmers in '*Farmers*', Skilled workers, Lower skilled workers, Unskilled workers in '*Workers*', and Lower skilled farm workers and Unskilled farm workers in '*Farm workers*'.

For the NKPS-dataset children were classified not according to the social class (as based on the occupation) of the father at the time of birth of the child but rather by his highest educational level completed with a diploma. Table 2 gives an overview of the characteristics of both the HSN data as well as the NKPS data.

*Here Table 2*

### **Living arrangements of children: Co-residing with parents**

To describe the living arrangements of children we first calculated for each exact age of the child how many of the children surviving till that age were still living, in their municipality of birth or elsewhere, with their biological father and mother, without any of their biological parents or with a stepparent (parental structure). We distinguished six birth cohorts: the first one coincided more or less with the period before the fertility and infant and childhood mortality decline (1850-79), the second one with the first stage of the first demographic transition, characterized by decreases in fertility and mortality (1880-99), and the third one with the last stage of that transition (1900-22). In the NKPS-data-set we separated the pre- (1923-39) and post-WWII birth cohorts (1940-64) from the cohort that was born during the second demographic transition (1965-85).

Figures 1 to 6 give for the six birth cohorts an overview of the percentages of children living in one of the six distinguished family situations.<sup>13</sup> Figures 7 to 12 depict the parental structure by birth cohort and social class.

An overwhelming majority of children grew up with both of their biological parents present during their whole childhood period. Yet Figure 1 shows that the

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<sup>13</sup> Note that the scaling of the y-axis of Figure 1, and Figures 2 to 5 differ.

percentage of children living with biological parents changed dramatically over the birth cohorts considered here. In cohort 1850-79, already around 10 percent of children lived without one or both of their parents at birth and at age 15 that percentage had increased to almost 35 percent.<sup>14</sup> The increased survival rates of fathers and mothers and the decreasing percentages of children born out-of-wedlock have led to a strong and continuous increase over time in the percentage of children growing up in a complete family. In particular the changes in the cohort 1880-99 were very strong. The further decrease in mortality after 1900 and the relatively modest increase in divorce made this the period in which the complete family could develop into the standard living arrangement of children. The cohort born in the midst of the second demographic transition was the first one that witnessed a return in the direction of the situation that was characteristic for the middle of the nineteenth century; still, the differences with those birth cohorts are enormous. Comparing the oldest and youngest cohort makes clear that growing up in a non-intact family nowadays is still much and much less common than it was a century ago.

Figure 2 shows that a considerable percentage of children grew up only with their mother (about 9 percent in birth cohort 1850-79 at age 15). Mostly these were children of unmarried mothers, who lived on their own or with their parents. As children got older, the percentage of children only living with their mothers increased; often this was due to the fact that women lost their spouse and did not re-marry. One can see nicely how the percentage of children that solely grew up with their biological mother decreased until 1964, but increased again after 1965 (over 6 percent). In sum, over cohorts, the main reason for single motherhood changed from death to divorce.

A much smaller percentage of children lived solely with their father: in the older cohorts this was mainly due to the death of the biological mother (Figure 3). This could happen shortly after the child was born. Although it was more common among widowers than among widows to re-marry, a relatively high percentage of widowers did not succeed in finding a new partner (Van Poppel, 1995; 1998) . Here we do not find quite the same trend over cohorts as in Figure 2. Over cohorts, single fatherhood is also increasingly caused by divorce or separation of the biological parents, but at least small children tend to stay with their mothers. However, in the latest birth cohort (1965-85) the

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<sup>14</sup> In line with the mortality differences between the provinces, we observed in the oldest cohort much lower percentages of complete families in Zeeland than in the other provinces.

probability that children stay with their biological father is rising again. The trajectories of the lines in the Figures 2 and 3 can be understood better by relating them to those of Figures 4 and 5.

These figures depict interesting gender differences that are a consequence of differences in chances to find a new spouse and stepparent for the child. On the one hand, as can be seen in Figure 4, in the nineteenth century it was not very common to co-reside with a biological mother and a stepfather: this bears upon only two percent of all 15-year-old children born in 1850-79, a percentage that decreased further over cohorts until WW II. Since then this living arrangement has gained importance and in the youngest birth cohort (1965-85) up to three percent of children are involved. The main reason for this increase is that divorce has become the most important cause of marital dissolution and that children after a divorce usually stay with their mother. On the other hand, as Figure 5 shows, more than seven percent of the 15-year-old children in the oldest cohort (1850-79) live under one roof with their biological father and stepmother. This percentage decreased strongly after 1900; since 1923, less than one percent of all 15-year-old children lived with their father and a stepmother.

The probability of growing up without biological parents (Figure 6) decreased strongly over birth cohorts: at age 15, the percentage was nine percent in cohort 1850-79 and it declined to two percent in the youngest cohort.

*Here Figure 1 to 6*

### **Co-residing with parents: Variation by social class**

There is every reason to expect that living arrangements for children were and still are different for the various social classes in society. There is a clear social class gradient in adult mortality levels and therefore the risks for children to experience the death of one their parents will have differed by social class. The fertility decline started at different moments and proceeded at different paces in the various social classes causing differences in the number of siblings present in each social class (Van Poppel, 1985). Divorce risks showed social class differentials as well (Van Poppel, 1997). To study the influence of socioeconomic circumstances on living arrangements of children, we use for our historical sample information on the occupation of the father of the child at the time of birth. For the small percentage of missings (4 percent, father or profession unknown),

we inserted the average score. As already mentioned, for the younger cohorts we took the highest educational level the father completed with a diploma. Because of small numbers we merged social classes based on similarity of living conditions: high and middle class, farmers, and workers for the older cohorts (HSN), and high/middle and low educational level for the younger cohorts (NKPS). Given the small numbers we combined the data for the first two cohorts into one groups, and the data for cohorts 1923-39 and 1940-64 into one group 1923-64. Figures 7 to 12 depict the different living arrangements of children by birth cohort and social class/ level of education.

Figure 7 shows the differences in the percentage of children living with both biological parents. To ease the interpretation, we have removed the farmers from this figure as the situation of children from this category is almost identical to those of the high and middle class. A remarkable reversal has taken place in the position of high and low social classes: among children born before 1923, living in a complete family was less common in the working class whereas in more recent cohorts, the lowest percentages of children living in a complete family are observed in the upper/middle class.

Lone mothers (Figure 8) were in the past much more common among the workers; mostly these were unmarried mothers and for that reason differences were most outspoken at the youngest ages of the child. Farmers had significantly lower percentages lone-mother families; that had to do with the fact that when a woman lost her husband, remarriage was a necessity to continue the family business. Here as well a reversal of the position of the lower and high/middle social classes took place: living along with a mother was before 1923 much more common in the lower social class, after that period this living arrangement was more frequent in the high/middle class. This is related to the much higher divorce rates among the higher educated. Remarkable is also that in the most recent cohort in lower social classes more children live in a mother-headed family than in the cohort born in 1923-64; in the middle/high class, such a change did not take place.

Children were more frequently raised by their father alone among farmers than among other social classes but in more recent cohorts no consistent differences between social classes could be observed (Figure 9).

Figures 10 and 11 depict those living arrangements in which children live with a stepparent. Mothers and stepfathers (Figure 10) were generally very rare before 1900 and were observed most frequently among farmers. After 1923, the percentage children living in such a situation increased in the middle/higher classes. Apart from the farmers, it has

never been so high as in the youngest birth cohort. Fathers and stepmothers (Figure 11) were much more common before 1900 than afterwards. In general, the lowest percentages were in all birth cohorts found in the lower classes and among farmers. This is in line with the relative high percentage of lone fathers found among farmers: It was more difficult for widowed farmers to find a new spouse than for other widowers. After 1900, this living arrangement lost its importance in all social classes.

Living without biological parents (for example in a boarding school, an institution, with more distant kin or entering service or to become live-in apprentice was before 1900 a little bit more common in the lower social class. Leaving the paternal home usually occurred around puberty. Why in the period 1923-64 this situation was more common among high/middle classes is not clear (Figure 12).

*Here Figures 7 to 12*

### **The presence of other kin and non-kin members in the child's living arrangement**

What other members of the kinship network made part of the familial environment in which the child lived? Were there also people present from outside the kinship network? This question has been central in the work of many family historians and sociologists. The basic theory now is that, when the modern family with its associated new ideals of domesticity and privacy emerged in the lives of the bourgeois families, the household became the family's private retreat. In the private home that emerged in the middle of the nineteenth century, household membership became restricted to the nuclear family, except for servants. Apprentices, boarders and lodgers, and dependent community members virtually disappeared from middle-class households. This process occurred initially in the lives of a small segment of the population, namely the urban middle classes and most historians have tended to generalize for the whole society on the basis of this middle-class experience. The process by which working-class families eventually adopted the new domestic style has not been documented. According to Hareven, home life retained a different character in working class families: their household membership continued to be more complex even in the twentieth century. Even though working-class families were also committed to the nuclearity of the household, they frequently took in members from outside and shared housing with them. Privacy was less important than the

flexible use of household space: a significant proportion of working-class households contained boarders and lodgers throughout the nineteenth and early into the twentieth century (Hareven, 1991; Shorter, 1975). Seccombe (1993) focusing in particular on the urban working class in England and France in the period 1830-1900 argued that children remained in their parent's households longer than they had in the period before industrialization started, that there was a rise in the number of unrelated living-in lodgers and an increase in the co-residence of non-nuclear kin, mostly parents or grandchildren of the household head.

How was the situation in the Netherlands? The conjugal family, the family that lived independent from extended kin, came into existence in the Netherlands relatively early. During the period of the Republic (1581-1795), Dutch household structure departed in a fundamental way from that of the neighboring countries (Damsma, 1993; Van der Woude, 1972). Only few nuclear families lived together with relatives and three-generation households and living-in siblings were extremely rare. Dutch households were on average smaller, more tightly organized and more independent of extended family intervention than elsewhere in seventeenth-century Europe (Schama, 1987), giving the impression of a high degree of family individualization. Legislation and jurisdiction regarding degrees of kinship within which marriage was prohibited, comments of moralistic authors on relations with relatives, published personal documents etc. all showed that the contacts with the circle of relatives did not constitute obligations of a penetrating nature (Haks, 1982).

To find out whether the living arrangements of children were indeed characterized by dominance of the nuclear family, we determined how many kin and non-kin were living in the household between the time of birth of the child and age 15. For the period 1850-1859 this causes some problems as the relationship of each individual to the household head was not recorded in the population register of this period. In particular for lateral and vertical kin this has led to an underestimation of the number of kin.

Figure 13 gives an overview of the mean numbers of kin and non-kin living in the household at the time of birth of the child for birth cohorts 1850-1985. Siblings – stepbrothers and stepsisters included – were by far the most important group in the household. Other members of the kin network and non-kin made up a negligible portion of the home environment of the child.

The mean number of siblings in the household at the time of birth of the central child first showed an increase between 1850 and 1890-1900, when total fertility rates

increased due to the lowering age at marriage, whereas at the same time first early childhood and later on infant mortality started to decrease. The number of siblings decreased after 1900 when the fertility decline that had started around 1880, gained force. After 1920, the mean number of siblings decreased very strongly, a decrease that for a large part can be attributed to the fertility decline: the average number of children per woman in this last period was around .8 child less than in the period in which the siblings of the earlier birth cohort were born. After the stability of the period 1940-60, fertility decreased again very strongly. It was only after 1923 that children grew up with a significantly lower number of siblings than in the nineteenth century.

An opposite trend over birth cohorts is visible in the numbers of persons that are not part of the sib group. Non-kin, as well as members of the extended family, were only present in very small numbers from the 1850s on and were more or less disappearing from the household from the 1860s on. Mention has to be made of the fact that due to the incomplete information on the relationships of each household member to the household head in the register of 1850-1860, more people might have been classified as non being a member of the kin network than actually was the case. In any case, the conjugal family more and more became the standard. Noteworthy is also the very limited number of co-residing grandparents. Again the data confirm that multi-generational households were the exception. That does not imply that there were no social classes differences in the percentage of children living in a household in which a grandparent was also present. In particular among workers this was more frequently the case than among farmers, and much more frequently than among high/middle class families.

*Here Figure 13*

### **Living arrangements and mortality in adulthood**

The preceding paragraph has shown that being born or raised in a one-parent family was in the Netherlands (and in many countries in Europe) during a large part of the nineteenth century not uncommon. Many children were born out of wedlock, and a non-negligible proportion of children who were born in a family were during their childhood confronted with the loss of one or both parents.

Various studies have been published in which the short-term effects of the absence or loss of one or both of the parents on the child's survival prospects have been evaluated. These studies showed that in the first year of life, being born in a one-parent household had a clear and statistically significant effect on the risk of death of the child after controlling for other health-related variables such as sex of the child, age and socio-economic group of the mother, religion, place of birth and working status of the mother(Kok, Van Poppel, & Kruse, 1997).

Studies have also been published on the short- and middle-term effects of the death of parents on mortality risks of orphaned children and these too showed the decreased survival prospects of orphaned children (Beekink, 2002, , 1999; Derosas, 2002; Kok et al., 1997; Reher, 2003).

When during the last decades, a large number of studies documented the impact of experiences in childhood and adolescence adulthood on survival in later life(Kuh & Ben-Shlomo, 1997) the attention also turned to the effect of family circumstances on health later in life (see for example Sweeting and West (1995)). In recent years several studies have been published which observed significant effects of family disruption during childhood on subsequent health. Lundberg (1993) found that living with only one parent up to age 16 was significantly associated with self-reported poor health in adulthood. Preston, Hill, and Drevenstedt (1998) observed that children living in households headed by their mothers had slightly higher probabilities of survival to age 85 than those with father heads but this advantage disappeared when the mother was unmarried. For total mortality, Smith et al. (2000)found that children who had experienced the death of one or both of their parents before the child had reached age 20, had excess mortality in particular during early and middle adulthood. Long-term effects of parental divorce before children had reached age 18 on mortality were found in a large Swedish study, where those who had divorced parents had relative risks which were 30 percent higher than the reference group, after controlling for factors such as social class, income, well-being etc.(Hansagi et al., 2000). Schwartz et al. (1995)observed that children from divorced families died four years earlier compared to their peers from non-divorced households.

Our data allow us to analyze the long-term effects of the family circumstances in which children grew up during the first fifteen years of their life on mortality later in life. A problem is that a considerable part of the birth cohort 1900-22 is still alive. For this cohort we only have information on their survival status from marriage registers (in case

they married) or from a notification in the population register for the period 1922-1939 or from death records and personal cards in case they died before 2003. Missing survival data for this cohort are not randomly distributed: the chance that we have no information on a person after 1939 - the end of the observation window for the survivors- is much higher for survivors than for the cohort as a whole and being censored around 1939 is not independent from the substantive process under study. Therefore, we assumed that for those individuals from cohort 1910-22 for who we have no information after December 15 1940 were still alive on January 1, 2000.

Table 3 gives the effects of various childhood structure indicators on mortality after the age of 18 using Cox's regression models. We can only estimate these models for the older birth cohorts (HSN), because the NKPS sample is based on survivors only.

In general, individuals (born between 1850-1922) who have ever lived without at least one parent during childhood do not have a higher mortality rate in adulthood than other individuals (Model 1), after controlling for gender, class, religion and urbanization. We ran the same analysis for the general mortality rates over the whole life span (including ages below 18), and found robust correlations between the absence of parents and mortality. It thus appears that if deprived children survive until adulthood, their childhood experiences have no disadvantageous effects on mortality anymore.

However, Model 2 shows that there are significant class differences, based on information on the father's occupation at the moment of the child's birth, in the consequences of growing up in a non-intact family. Deprived children from the middle and higher classes do better in adulthood, in comparison with deprived children of farmers. This can also be seen in Models 3 and 4 where the number of years lived in a one-parent family is used as indicator for living arrangements. The effect of was also significant now for children that grew up in a worker's family. In addition, it appears to be a greater disadvantage to grow up with a mother and stepfather, than to grow up in any other living arrangements, in particular compared to living with father and stepmother (Model 5).

*Here Table 3*

## **Discussion**

Population registers proved to be an excellent source to bring to light the revolutionary changes in childhood living arrangements in the past hundred and fifty years. Together with the survey data they brought to light the very strong decrease in the percentage of children that had to live with only one or not a single one of their biological parents. We could show that although there was a return in the direction of the situation that was characteristic for the middle of the nineteenth century, growing up in a non-intact family nowadays is still much and much less common than it was a century ago. The percentage of children growing up with their biological mother also decreased first and increased again after 1965, reaching almost the nineteenth-century values. Single fatherhood on the other hand is on a continuous decline. We observed strong differences in the frequency of children co-residing with a biological mother and a stepfather or with a biological father and a stepmother: the first living arrangement gained importance, the last one did not. Growing up without biological parents became more and more an exception.

We observed striking differences and changes over time in living arrangements between social classes. Living in a complete family was in the past less common in the working class whereas in more recent cohorts it is the upper/middle class where this is more frequently the case. Such a reversal also took place in the percentages of children living with a mother alone, but here it were workers where this situation was more common in the past. Remarkable was also that in the most recent cohort in lower social classes more children live in a mother-headed family than in the cohort born in 1923-64.

We also studied the presence of other persons in the household in which children grew up, kin and non-kin. Siblings were by far the most important group in the household and their number decreased only when the twentieth century was already several decades old. Other members of the kin network and non-kin made up only a negligible portion of the home environment of the child and their numbers continuously decreased.

Interpreting these changes in terms of the demographic causes has not been the main purpose of this study. This will be done in the near future by studying the basic demographic events that led to a given living arrangement for the child: whether he or she lived in a one-parent family because of being born out of wedlock or because of the death of the father or mother, or the divorce of the parents; whether the number of siblings with which the child lived increased due to lowered mortality risks of siblings already present or because the number of live-born children actually increased or because siblings already present left the parental home earlier or later.

A second issue that will be studied in more detail concerns the composition of the group that lived with children in the home. This includes a focus on the size of the sibship and attention for differences between small and large families, more detailed information on the presence of stepchildren, on age composition of siblings, on the presence of non-kin and members of the extended kin network in relation to the presence of both parents or not, differences in leaving-home patterns of children in situations where stepparents are present or not etc.

We will also use event history models to estimate the risks of experiencing changes in living arrangements during childhood, taking into account age, cohort, socio-economic class, level of urbanization and macro-level social, economic and demographic indicators.

Much more attention will be given to the consequences for children of being brought up in a given living arrangement. That implies not only extending the information on survival of the most recent cohort but also studying indirect effects, working for example through the effect of family structure on socio-economic status reached later in life. Finally, we will model long term consequences of different living arrangements in childhood on other life course transitions in adulthood such as the status of the first job, entering first marriage, parenthood, and divorce between 1850 and 2000.

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Map 1 Location of the research area HSN



Table 1. Demographic indicators for the three selected provinces and the Netherlands as a whole

	Around 1850							
	Zeeland Males	Zeeland Females	Utrecht Males	Utrecht Females	Friesland Males	Friesland Females	Netherlands Males	Netherlands Females
Probability of death (per 1000) between								
- ages 0 and 15	458	443	42.2	40.2	30.3	28.7	38.4	36.2
- ages 25 and 55	425	399	34.5	33.3	37.4	36.0	36.8	35.2
Marital fertility (Ig)		0.898		0.896		0.816		0.828
Extramarital births (per 100 births)		4.2		5.6		2.8		4.7
Divorce rate (per 10.000 married couples)		1.32		0.15		0.43		1.23
	Around 1900							
Probability of death (per 1000) between								
- ages 0 and 15	229	194	27.3	24.5	18.5	16.9	24.9	22.4
- ages 25 and 55	193	186	20.7	18.7	20.6	21.5	22.3	21.0
Marital fertility (Ig)		0.746		0.799		0.647		0.753
Extramarital births (per 100 births)		2.9		3.4		2.0		2.6
Divorce rate (per 10.000 married couples)		4.72		5.83		3.29		6.33
Probability of death (per 1000) between								
- ages 0 and 15	83	67	8.2	6.9	8.1	6.3	9.5	7.6
- ages 25 and 55	102	126	11.9	12.8	12.1	13.5	13.4	14.0
Marital fertility (Ig)		0.391		0.448		0.330		0.452
Extramarital births (per 100 births)		1.5		1.9		1.4		1.8
Divorce rate (per 10.000 married couples)		5.3		14.3		5.8		19.2
	Around 1950 and 1980							
	1950				1980			
	Netherlands				Netherlands		Netherlands	
	Males	Females			Males	Females		
Probability of death (per 1000) between								
- ages 0 and 15	43	33					15	11
- ages 25 and 55	87	69					78	44
Marital fertility (Ig)		0.539						0.202
Extramarital births (per 100 births)		1.5						4.6
Divorce rate (per 10.000 married couples)		30.5						75.1

Table 2 Description of the HSN and NKPS data by birth cohorts, social class, and province

		Birth cohorts	Zeeland	Utrecht	Friesland	N	%
HSN	1850-1879	1240	1175	934	3349	45.8	
	1880-1899	610	758	506	1874	25.6	
	1900-1922	625	884	587	2096	28.6	
	Total	2475	2817	2027	7319	100.0	
NKPS	1923-1939	-	-	-	1369	16.8	
	1940-1964	-	-	-	4088	50.1	
	1965-1985	-	-	-	2697	33.1	
	Total				8154	100.0	

		Social class father	Zeeland	Utrecht	Friesland	N	%
HSN	Farm workers	1175	642	775	2592	35.4	
	Workers	641	1339	605	2585	35.2	
	Farmers	303	298	251	852	11.6	
	Middle	207	374	249	830	11.3	
	High	149	164	147	460	6.3	
	Total	2475	2817	2027	7319	100.0	
NKPS	Education low	-	-	-	4725	57.9	
	Education middle	-	-	-	2064	25.3	
	Education high	-	-	-	1365	16.7	
	Total				8154	100.0	

		Cohort/Class	Zeeland	Utrecht	Friesland	N	%
HSN	Workers 1850-1899	1359	1374	985	3718	50.8	
	Workers 1900-1922	457	607	395	1459	19.9	
	Farmers 1850-1899	226	213	176	615	8.4	
	Farmers 1900-1922	77	85	75	237	3.2	
	Middle/high 1850-1899	265	346	279	890	12.2	
	Middle/high 1900-1922	91	192	117	400	5.5	
	Total	2475	2817	2027	7319	100.0	
NKPS	Low 1923-1964	-	-	-	3421	42.0	
	Low 1965-1985	-	-	-	1305	16.0	
	Middle/high 1923-1964	-	-	-	2036	25.0	
	Middle/high 1965-1985	-	-	-	1392	17.1	
	Total				8154	100.0	

Table 3. Effects of living arrangements on mortality rate after age 18  
(Cox's regression models)

	(1)	(2)	(3)	(4)	(5)	Variable means
	<i>Exp(b)</i>	<i>Exp(b)</i>	<i>Exp(b)</i>	<i>Exp(b)</i>	<i>Exp(b)</i>	
Ever lived without one of the parents below age 15	1.06 (1.48)	0.89 (1.36)				0.28
Idem*workers		1.22 (1.47)				
Idem*farmers		1.24* (2.18)				
#Years without one of the parents below age 15			1.00 (0.95)	0.98* (2.00)		2.12
Idem*workers				1.03** (2.62)		
Idem*farmers				1.02~ (1.77)		
#Years without one of the parents below age 15					1.00 (0.67)	0.67
# Year without mother below age 15					1.00 (0.39)	0.72
#Years without father below age 15					1.01 (1.02)	0.52
#Years with mother/stepfather below age 15					1.03* (2.05)	0.15
#Years with father/stepmother below age 15					0.99 (1.30)	0.43
Period 1850-79 (ref=1880-99)	1.23** (5.14)	1.23** (5.11)	1.23** (5.16)	1.24** (5.21)	1.24** (5.21)	0.39
Period 1900-22 (ref=1880-99)	0.80** (5.22)	0.79** (5.29)	0.79** (5.27)	0.79** (5.26)	0.79** (5.30)	0.34
Man (ref=woman)	1.19** (5.12)	1.19** (5.17)	1.19** (5.10)	1.19** (5.14)	1.18** (5.05)	0.51
Workers (ref=midhigh)	1.09~ (1.82)	1.02 (0.38)	1.09~ (1.81)	1.08~ (1.72)	1.08~ (1.73)	0.69
Farmers (ref=midhigh)	1.09 (1.27)	1.02 (0.31)	1.08 (1.27)	1.08 (1.24)	1.08 (1.20)	0.12
Noinfo (ref=midhigh)	1.42* (2.11)	1.44* (2.18)	1.43* (2.15)	1.41* (2.06)	1.43* (2.12)	0.01
Protestant (ref=none/noinfo)	1.03 (0.48)	1.03 (0.40)	1.03 (0.49)	1.03 (0.38)	1.03 (0.51)	0.68
Catholics (ref=none/noinfo)	1.06 (0.85)	1.06 (0.79)	1.06 (0.87)	1.06 (0.75)	1.07 (0.88)	0.25
Rural (ref=urban)	0.87** (3.67)	0.87** (3.70)	0.87** (3.69)	0.87** (3.79)	0.87** (3.74)	0.67
<b>Observations</b>	4601	4601	4601	4601	4601	

Figure 1. Percentage of children co-residing with both biological parents, by age of the child and birth cohort

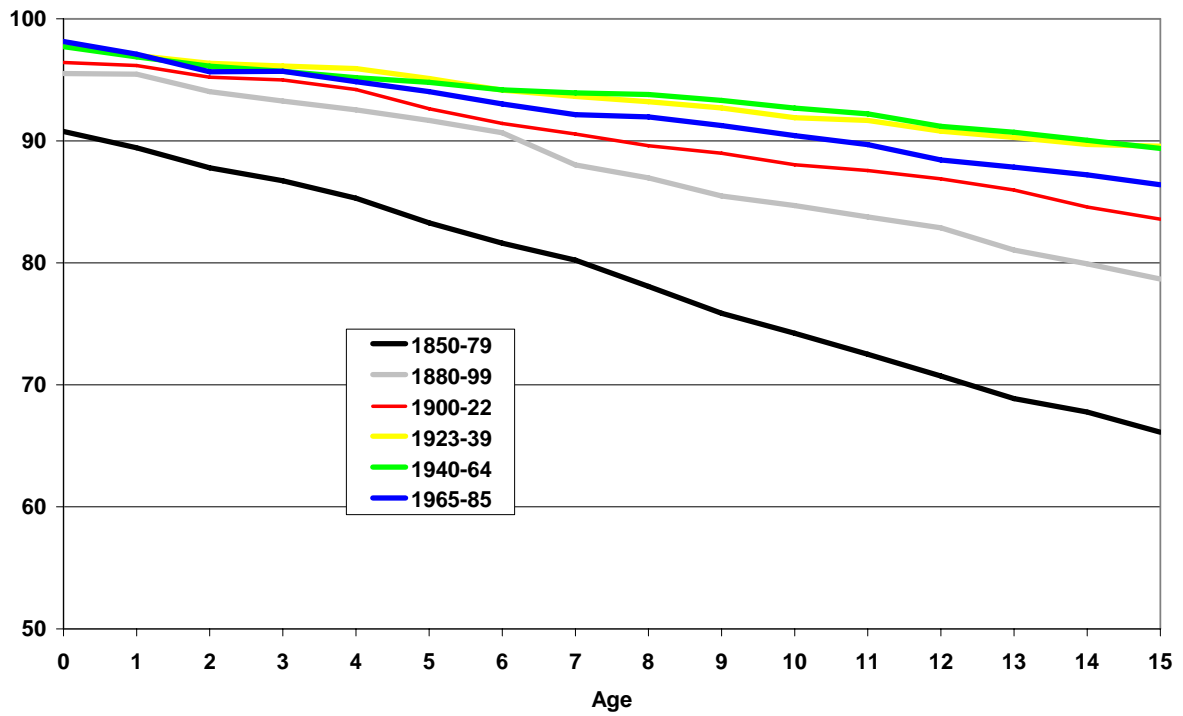


Figure 2. Percentage of children co-residing with their mother only, by age of the child and birth cohort

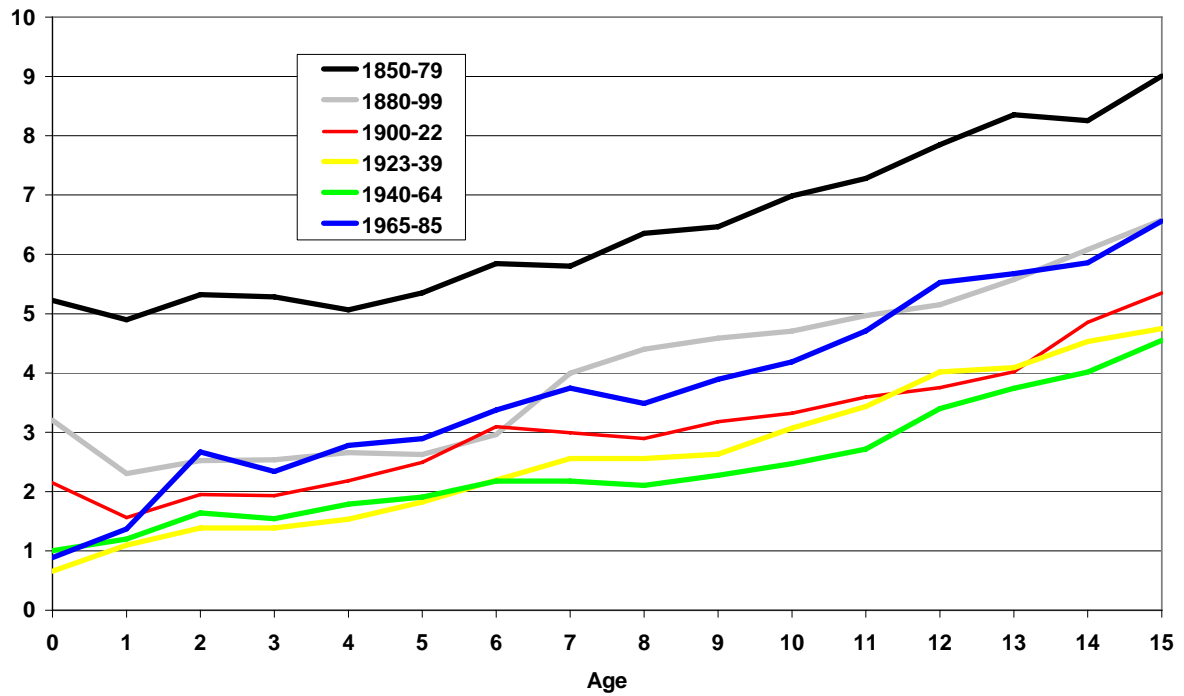


Figure 3. Percentage of children co-residing with their father only, by age of the child and birth cohort

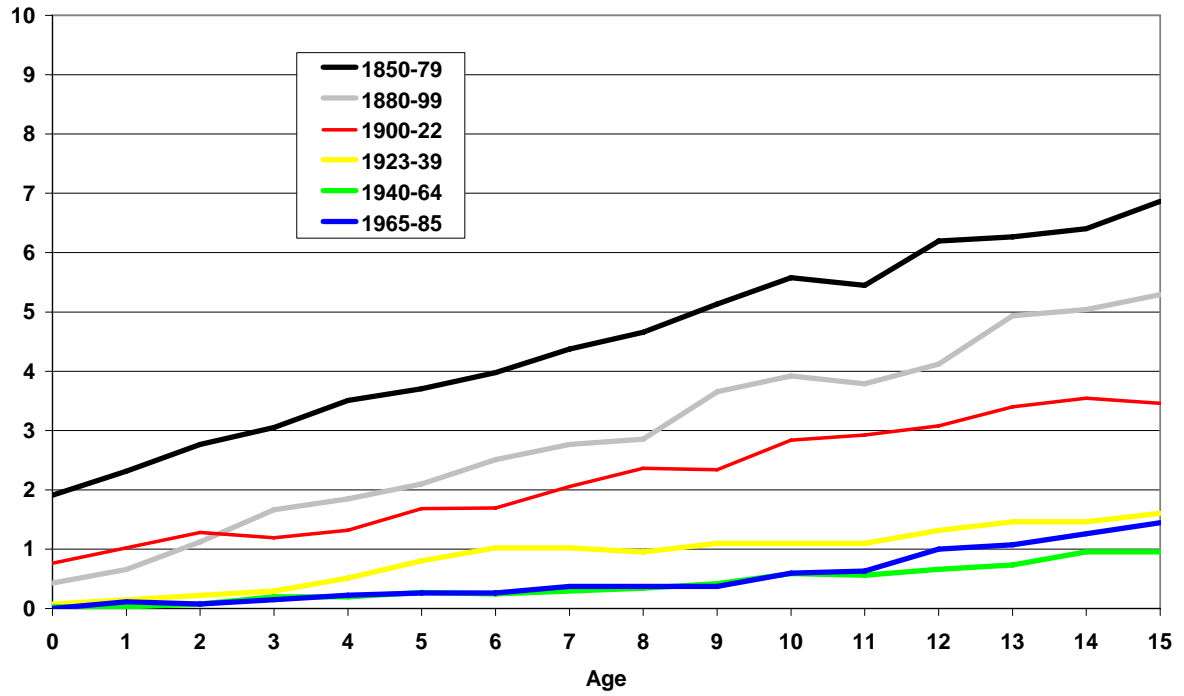


Figure 4. Percentage of children co-residing with mother and stepfather, by age of the child and birth cohort

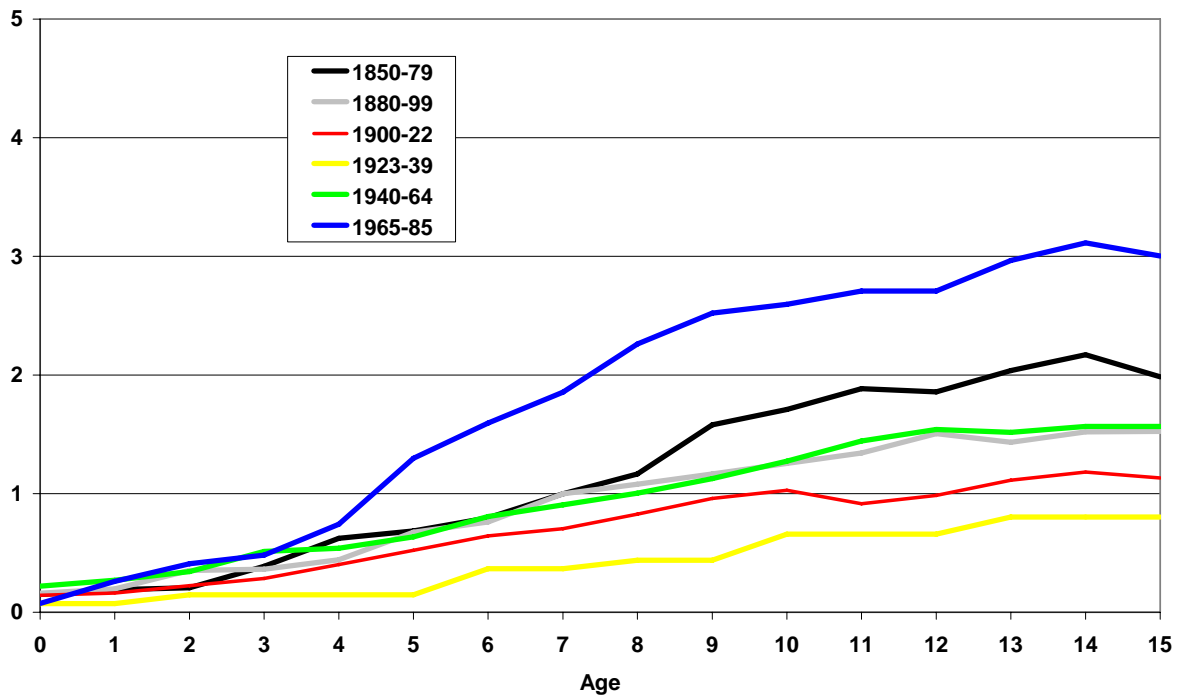


Figure 5. Percentage of children co-residing with father and stepmother, by age of the child and birth cohort

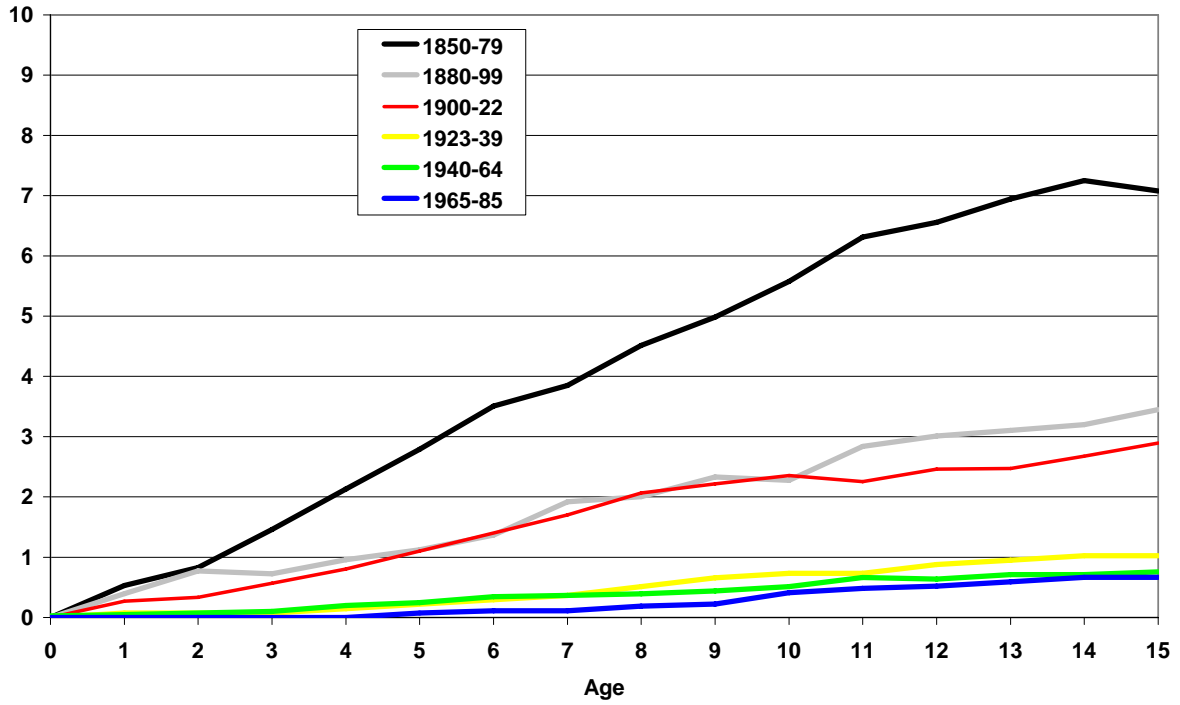


Figure 6. Percentage of children co-residing without their biological parents, by age of the child and birth cohort

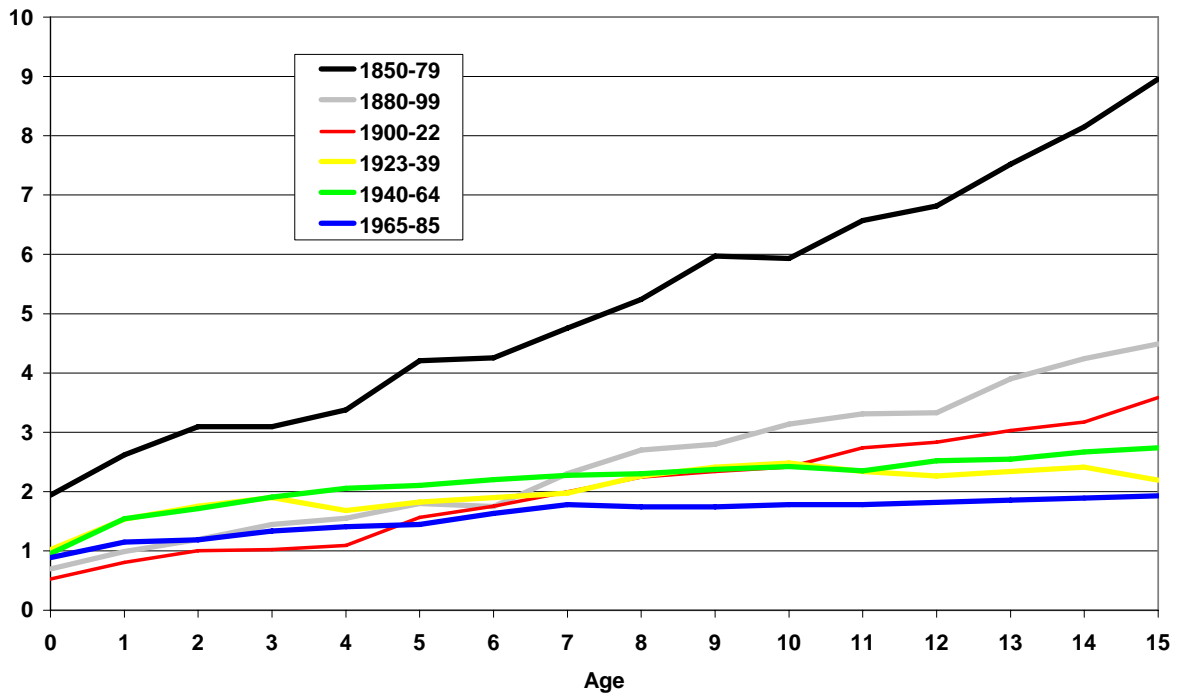


Figure 7. Percentage of children co-residing with both biological parents, by age of the child, birth cohort and social class

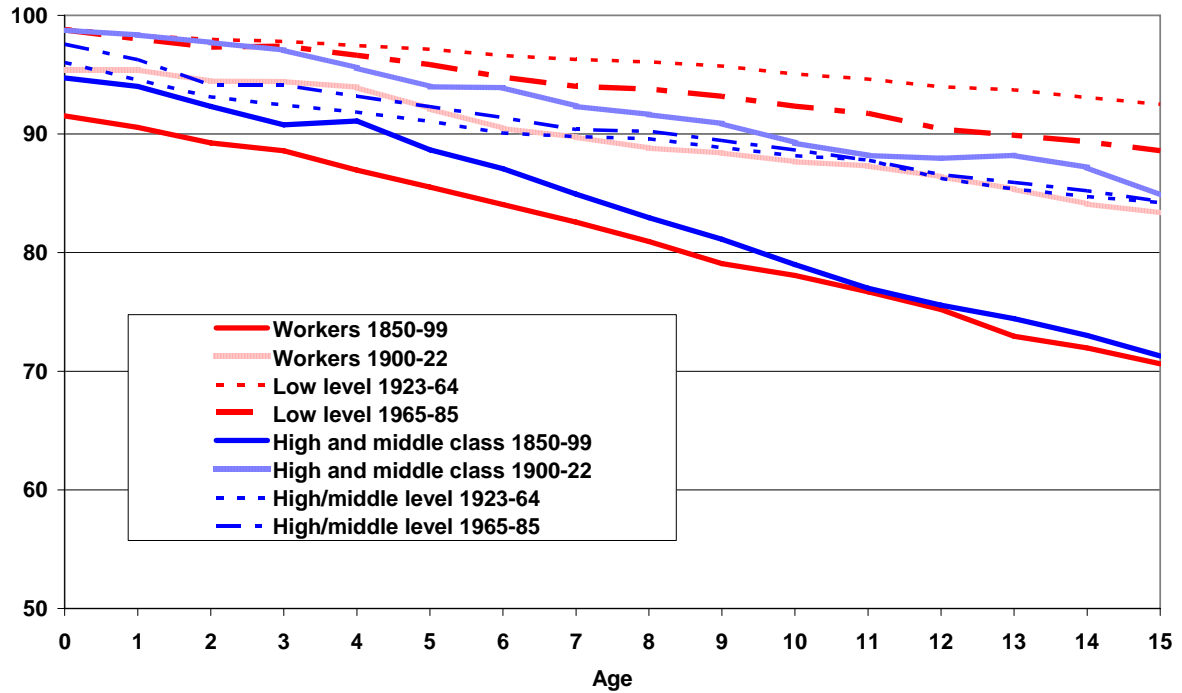


Figure 8. Percentage of children co-residing with their mother only, by age of the child, birth cohort and social class

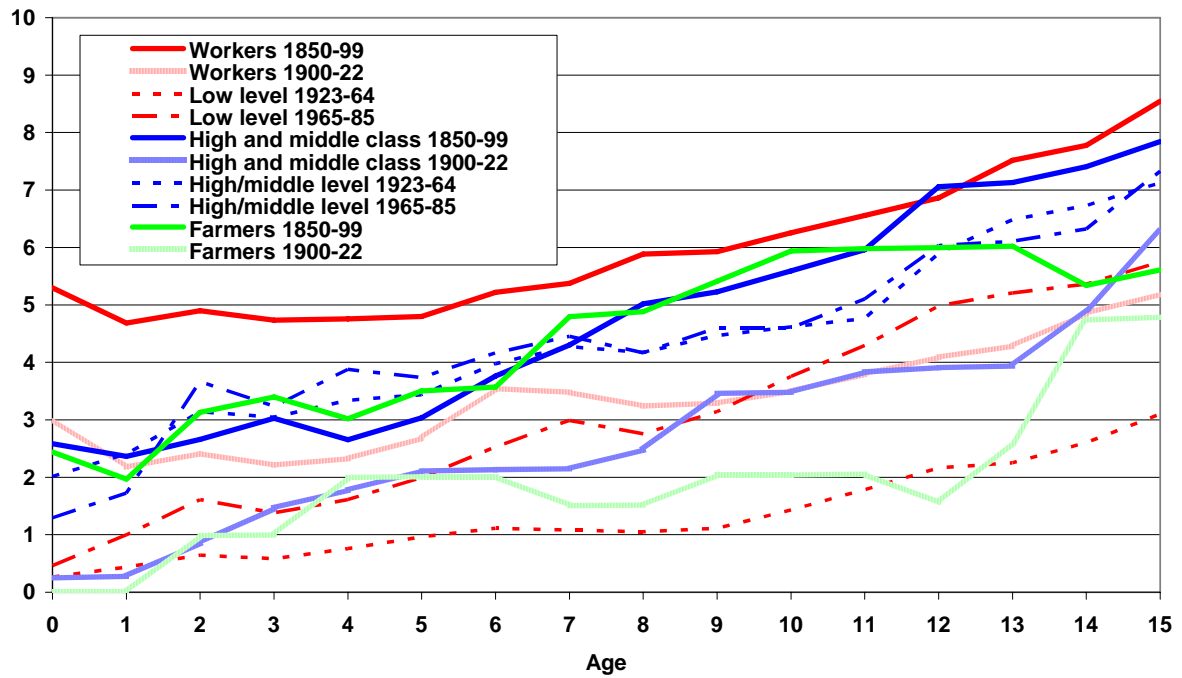


Figure 9. Percentage of children co-residing with their father only, by age of the child, birth cohort and social class

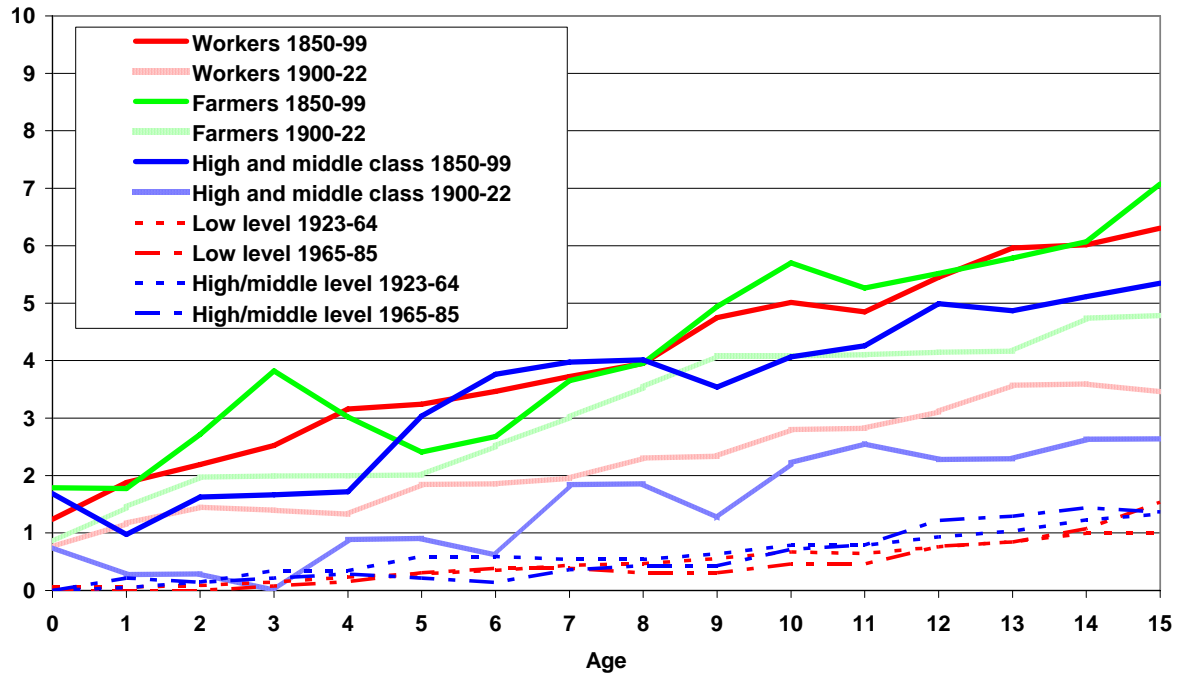


Figure 10. Percentage of children co-residing with mother and stepfather, by age of the child, birth cohort and social class

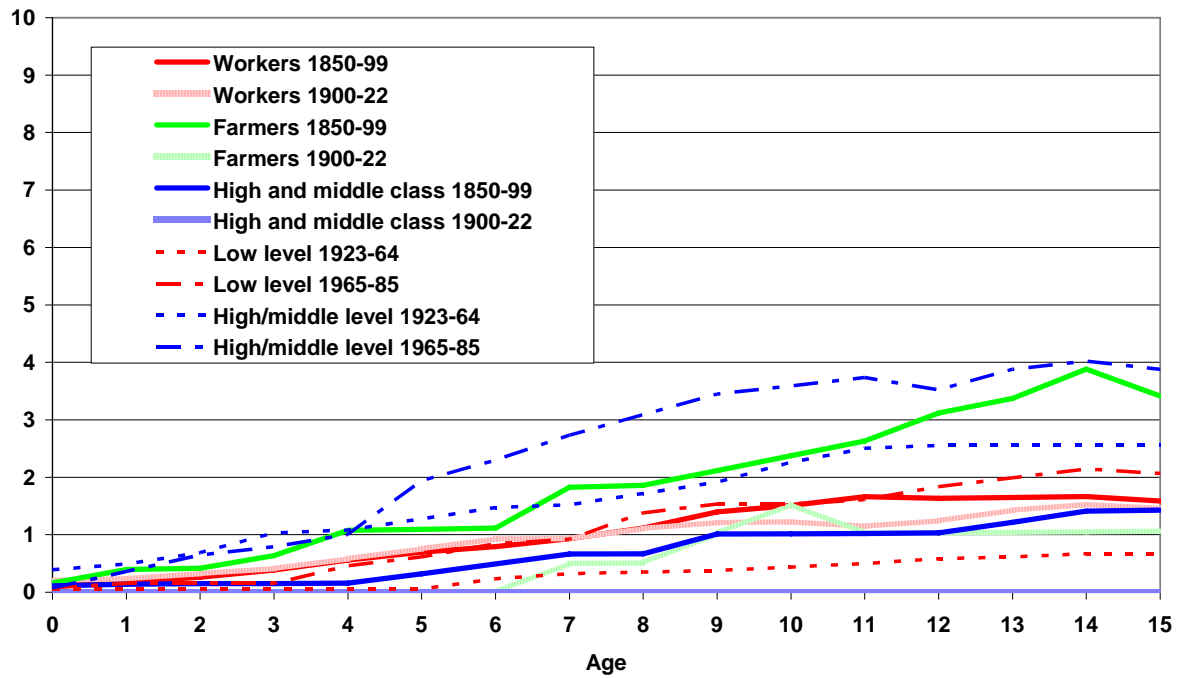


Figure 11. Percentage of children co-residing with father and stepmother, by age of the child, birth cohort and social class

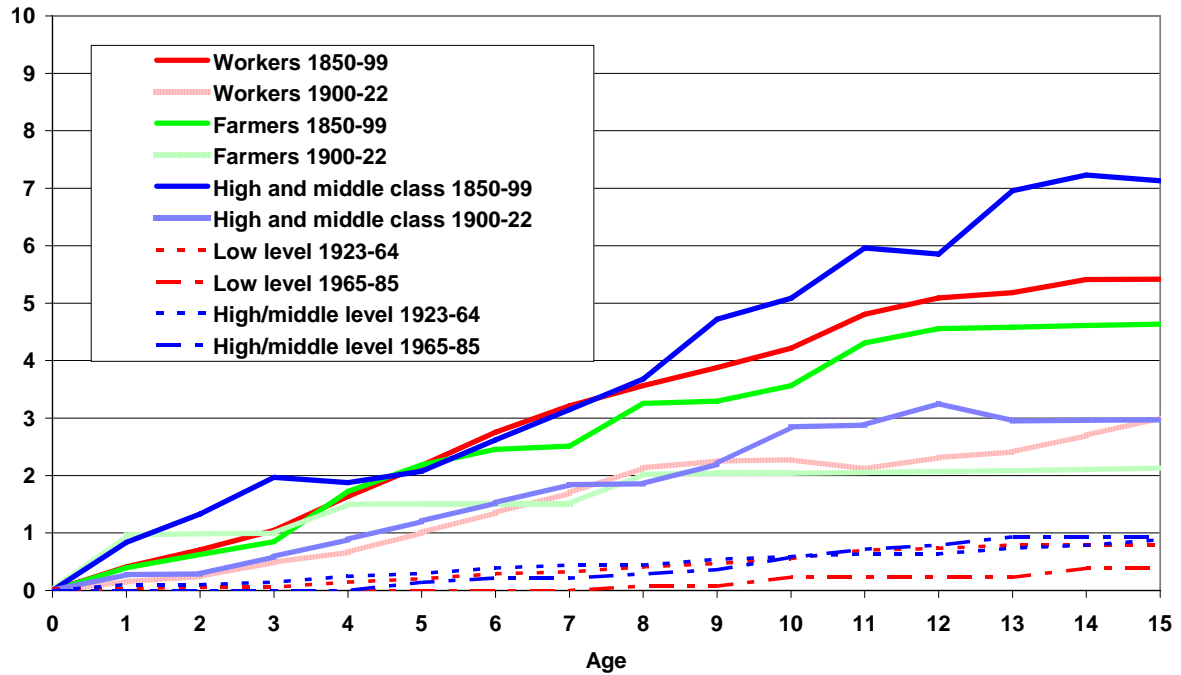
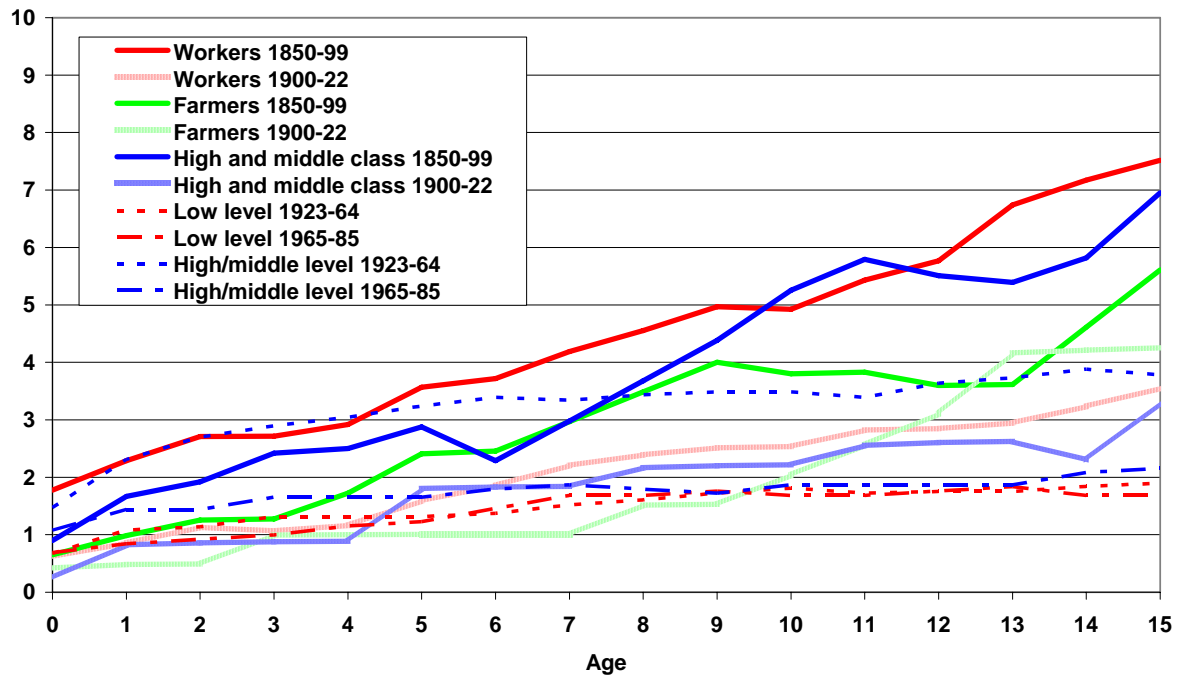


Figure 12. Percentage of children co-residing without their biological parents, by age of the child, birth cohort and social class



**Figure 13. Average number of people with which the child is living at the time of birth, by birth cohort**

