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Kinship and socio-economic status: Social gradients in frequencies of kin across the life course in Sweden

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The influence of kin on various outcomes is heavily debated. However, kinship size itself conditions the probability of potential effects. Socio-economic gradients in the prevalence, variance, and types of kin are, therefore, a vital aspect of the functions of kin. Unfortunately, these parameters are largely unknown. We used Swedish register data to enumerate consanguine and in-law kin across the life course of the 1975 birth cohort. We calculated differences in kinship size between this cohort's income quartiles and educational groups. We decomposed how specific kin relations, generations, and demographic behaviours contributed to these differences. Among low socio-economic status (SES) groups, higher fertility in earlier generations resulted in more kin compared with high-SES groups. Low-SES groups had more horizontal consanguine kin, while high-SES groups had more in-laws. Lower fertility and higher union instability among low-SES men substantially narrowed SES differences in kinship size. Kinship size varied substantially within SES groups.

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Keywords: kinship; socio-economic status; generations; Sweden; extended family; in-laws

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Introduction

Recent decades have witnessed a growing interest in kinship across the social sciences. In demography, this has been reflected in research estimating the demographic characteristics of kin, including the incidence of kinlessness, as well as total kinship size (Malmberg and Pettersson 2007; Daw et al. 2016; Margolis and Verdery 2019). A diverse literature has documented how extended family affects life chances and provides emotional support and care for dependent children or ageing relatives (Rossi and Rossi 1990; Bengtson 2001; Furstenberg 2020). Compared with other sectors of society, kin members are the most likely to give financial aid and can provide informal access to labour markets and advice on educational choices (e.g. Milardo 2009). Social stratification research has explored the possibility of social advantages being nested

within kinship structures and found that individuals' own socio-economic outcomes are associated with the characteristics of both proximate and more remote kin (Mare 2011). However, the debate over the causal influence of kin on advantageous outcomes and social mobility, and previous studies of kin as a cause and consequence of social stratification, have not been complemented by a demographic analysis of the frequencies of kin across socio-economic groups (Anderson et al. 2018; Lundberg 2020).

Research has identified substantial socio-economic gradients in the demographic processes that determine kinship: for example social gradients in mortality (Bosworth 2018), age at childbirth, and number of children ever born (Jalovaara et al. 2019; Kolk 2023), in marriage, cohabitation, and union dissolution (Härkönen and Dronkers 2006; Kalmijn 2013), in partnership choice (Blossfeld 2009), and in complex kin relations following

multi-partner fertility (Jalovaara et al. 2022). Yet, we know little about socio-economic gradients in the size, variance, and composition of kin networks (but see Goldstein and Warren 2000; Daw et al. 2016). This research gap is not only surprising but also unfortunate and problematic for at least two reasons. First, social scientists analysing the ‘effects’ of kin tend to assume a homogenous distribution of kin across social groups (Bengtson 2001). To calculate the impact of how kin can provide help, we need not only information on individuals’ propensity to help but also data on the denominator (i.e. number of kin). Second, while the field of kinship demography has produced a theoretical comprehension of kinship, the models developed have rarely been contrasted against empirical data, especially data concerning socio-economic differences in kinship structure. The research field remains in an exploratory phase. For this study, we used administrative registers to analyse kinship across four parent–child generations for a full birth cohort born in Sweden in 1975 (the index cohort), and we examined differences in the composition and size of kinship networks across income groups. We documented the average number of living kin (in total and by type) at each age from birth to age 45. We quantified the magnitude of socio-economic status (SES) gradients in kinship and which types of kin were propelling the differences at each age. The research described in this paper aims to answer which demographic forces—fertility, mortality, or family dynamics—and which generation(s) contribute most to SES gradients in kinship. We examine at what ages SES gradients most strongly manifest. We also explore differences between men and women in both demographic behaviour and examine SES gradients in kinship by sex.

To study these questions, our research design diverged from those of most previous analyses for several reasons. First, in theoretical work on kinship, a fundamental difference has been established between biological kin (hereafter consanguine kin) and kin accrued through marriage (partners and in-laws, hereafter affinal kin). Affinal kin transfer wealth and resources across unrelated families and create horizontal social bonds of a cohesive character (Lévi-Strauss 1969 [1949]). Yet, kinship demography has focused largely on consanguineous relations only. We investigated both consanguineous and affinal kinship. Second, the socio-economic gradients in fertility and marriage differ by sex. For example, completed fertility often displays a more positive gradient for men than women (Lappegård 2020; Kolk 2023), and rates of intergenerational

mobility may differ between the sexes (Thaning and Hällsten 2020). Because this likely has implications for SES gradients in kinship, we examined men and women separately. Third, the SES gradients of a given birth cohort represent the combined outcome of an individual’s fertility, mortality, and union formation, as well as the number of children, age at childbirth, and spacing of other kin members, such as parents and aunts/uncles. Therefore, kinship structures will vary substantially at different chronological ages for members of the index cohort in different SES groups. Hence, counts at a fixed age may distort SES gradients in kinship (e.g. Malmberg and Pettersson 2007; Kolk et al. 2023). We used a longitudinal cohort perspective to measure the in- and outflow of kin across the life course from birth to age 45. Fourth, our use of register data allowed for substantially extended analyses compared with previous approaches for calculating kinships (e.g. survey data estimates, microsimulations, and analytical methods). These benefits included coverage of nearly all individuals that made up the kinship network, no reliance on assumptions about population homogeneity in kinship-generating behaviour, and the possibility of analysing the variation in, rather than the arithmetic average of, kinship demographics.

Our findings shed light on the processes involved in generating a socially stratified kinship structure amassed by the distinct demographic behaviours of four generations. The results show that the average total kinship size for women born in 1975 is up to half a standard deviation (SD) larger for those earning low incomes than those on high incomes. For men, those earning low incomes have substantially more kin at younger ages, while those on high incomes have more kin at older ages. We show that cousins, aunts, uncles, and in-laws are the kin types that drive this pattern.

Socio-economic differences in demographic behaviour

The number of kin an individual has and the socio-economic gradients therein are determined by the demographic behaviour of the individual themselves and that of their contemporary, preceding, and subsequent generations. In this section, we review research on the social gradients in demographic behaviour that determine kinship. In the subsequent section, we further discuss the dynamics of the social stratification of kinship, including its embeddedness in historical context, the influence of

kinship on SES, and the intergenerational transmission of demographic behaviour and SES.

The level of mortality in a population affects how likely subsequent generations are to be alive at the same time and the extent of generational overlap. There has been a negative correlation between mortality and SES across high-income countries in the twentieth and twenty-first centuries (Bosworth 2018). Some evidence indicates that such differences are growing larger over time (Bosworth 2018; Bengtsson et al. 2020).

A key determinant of the size of a kinship network is the average number of children of older kinship members. If an individual's parents, grandparents, children, and siblings have more children, their kinship network will expand, and more generations will be alive at the same time, thus making their network more horizontally extended (Bengtson 2001). Pre-industrial populations displayed positive gradients between status and completed fertility, while after the demographic transition, negative correlations were more often found, particularly for women (Lee 1987; Skirbekk 2008). In twentieth- and twenty-first-century Sweden, this pattern has been strongly gendered, with positive or neutral associations for men but negative gradients becoming neutral or positive over time for women (Edin and Hutchinson 1935; Jalovaara et al. 2019; Kolk 2023). For cohorts born in the 1970s and later, there are positive gradients between income and fertility for both sexes, while for education the gradient is neutral for women and positive for men (Jalovaara et al. 2019; Kolk 2023).

Not only the number of children but also the age at childbirth matters for kinship structures. Earlier childbirth across generations produces kinship networks with more individuals alive at the same time, whereas later childbearing decreases generational overlap (Murphy 2011; Kolk et al. 2023). Later childbirth thus means that fewer people from the older generation will still be alive as individuals age. Age at first birth usually increases with higher SES and education. As a determinant of generational overlap (e.g. the average shared lifespan of a grandchild and grandparent), SES differences in age at childbearing (and hence more or less time between generations) are more important than differences in mortality; as a result, the probability of an individual's grandparents being alive is higher among low-SES groups in Sweden (Kolk 2017).

Moreover, longer intervals between births in older generations cascade across the kinship network, causing temporally more dispersed kinship networks for kin such as cousins (Kolk and Hällsten 2017). In

Sweden, low-SES groups exhibit more dispersed birth spacing than high-SES groups (Andersson 2020). Hence, siblings will be born less close to individuals in low-SES groups. Moreover, if men and women have children with one or more partners, this will affect kinship networks as well as fertility (Thomson et al. 2012). Low-SES groups show a higher incidence of births with multiple partners (Andersson 2021; Jalovaara et al. 2022). As a consequence, a larger share of low-SES individuals' kinship networks will consist of half-siblings rather than full siblings.

Socio-economic differences in kinship structure

Research on social stratification has documented that socio-economic differences are inherited intergenerationally. On average, we can be certain that children and parents, and to a lesser extent cousins, grandchildren, and aunts and uncles (Hällsten and Kolk 2023), will share socio-economic characteristics. However, because of social mobility, there will still be considerable heterogeneity within kinship networks in terms of socio-economic outcomes (see Goldstein and Warren 2000). Social mobility decreases socio-economic differences in kinship, and societies with lower inequality will likely exhibit less pronounced socio-economic differences in demographic behaviour. Moreover, demographic behaviour itself, above and beyond social mobility, is correlated across generations and among kin members of the same generation. There is evidence of intergenerational transmission of fertility (Murphy 1999; Kolk 2014a, 2014b), divorce (Amato 1996), and mortality (Gavrilov and Gavrilova 2001). Intergenerational correlations in fertility will create some very large and some rather small kinship networks, which may be an important explanation for the large variation found in number of kin within a population (Kolk et al. 2023).

Moreover, family and kinship structure may also impact SES. Both parental age and number of siblings may influence a child's SES but will also shape the structure of their kinship network. Such effects may be causal or associational but will in either case be associated with socio-economic differences in kinship.

Another source of complexity is that a four-generation kinship network consists of individuals born over a very wide timespan (up to a century apart), where generations often overlap in birth years (Kolk and Hällsten 2017). During this period, the

socio-cultural and demographic contexts will have changed tremendously. While an individual's socio-economic position is likely to be correlated with the socio-economic position of their kin, the socio-economic gradient in fertility may differ substantially across historical time and generations of kin. For example, in the 1960s and 1970s, union instability was more common in high-SES groups, but now the opposite is true (Härkönen and Dronkers 2006); women with high incomes and high education used to have fewer children, but this is no longer the case in contemporary Sweden (Jalovaara et al. 2019; Kolk 2023).

In sum, there are reasons to expect socio-economic differences in kinship composition and size. However, multiple demographic and generational processes influence SES gradients in kinship in opposing directions. The direction of socio-economic correlates of demographic behaviours and kinship structure will vary by historical period, degree of social mobility, degree of intergenerational transmission of demographic behaviour, and chronological age (Lundholm and Malmberg 2009; Breen et al. 2019).

Several parameters may cause the SES gradient in kinship structures to differ across countries. In Sweden, the context of the present study, social mobility is high compared with many other countries, which means that the correlation between an index cohort of a given social strata and its number of extended kin may be weaker than in some places. Another source of variation is the degree to which men and women differ in their demographic behaviour in general and across social strata. Sweden clusters among the countries with fairly small sex differences in, for example, fertility (Lappegård 2020) and where the direction of the SES gradient in fertility is the same for men and women in a later-born cohort (Kolk 2023). It is important to stress, however, that the differences in social mobility between contemporary high-income countries are a matter of degree and not of kind (Breen 2004). Importantly, the popular notion that Sweden is a particularly socially mobile society is contested among stratification researchers and not borne out by the empirical data: the classic study by Erikson and Goldthorpe (1992) placed the occupational class mobility of Sweden behind that of the United States (US) and Australia; Ludwinek et al. (2017) ranked Sweden among the semi-mobile, as did Bukodi et al. (2019) and Hertel and Groh-Samberg (2019), whereas Breen and Luijkx (2004) found that in Europe only Poland reported higher mobility. Educational mobility in Sweden

has repeatedly been ranked in the middle among high-income countries (Hertz et al. 2007; Pfeffer 2008; Van der Weide et al. 2021). However, above and beyond intergenerational social mobility, inequality between SES groups is comparatively low in Sweden, and SES gradients in fertility and nuptiality may very well be stronger in other contexts.

Previous research in kinship demography

Kinship demography has focused primarily on producing estimates of kin relations at the population level (Murphy 2010; Daw et al. 2016; Verdery et al. 2019; Caswell 2020; Kolk et al. 2023). A recent review identified research on social differences in kinship as particularly unexplored (Alburez-Gutierrez et al. 2022).

Co-resident kinship has been well covered in studies using census data (Ruggles and Brower 2003; Ruggles and Heggeness 2008). Census data often include socio-economic information, so basic correlates of socio-demographic covariates with household arrangements have been calculated in different contexts (Ruggles and Heggeness 2008; Pilkauskas et al. 2020). For near kin, such as grandparents and grandchildren, considerable knowledge exists on both demographic and SES patterns (Leopold and Skopek 2015; Chapman et al. 2017; Skopek and Leopold 2017; Margolis and Verdery 2019), whereas for more remote kin we know less.

For research on kinship outside the household and grandchild–grandparental relationships, different methods have been used. Analytical models have used demographic rates to estimate kinship frequencies (Goodman et al. 1974; Uhlenberg 1996). Such models produce kinship estimates based on the assumption that an entire kinship network shares the same demographic behaviour. This could in theory be harnessed to assess kinship differences between socio-demographic groups, but this is most plausible if groups are highly endogamous (e.g. Black people and white people in the US). An example of using an analytical model with socio-economic information can be found in the work of Song and Mare (2019), who calculated the extent to which grandparents and grandchildren overlap at different ages. Microsimulation also involves using rates to estimate kinship: individual-level rates are used to produce micro-level simulated kinship networks (Wachter 1997; Murphy 2004, 2010; Zagheni 2015). From such networks, demographers can then establish how kinship has changed

over time, and projected rates can be used to extend forecasts into the future.

Neither analytical models nor microsimulations account for the fact that demographic behaviour (and SES) is correlated within families (Ruggles 1993). Neither method is easy to use for estimating socio-economic differences in kinship. While Dudel (2014) showed that with adequate input data, formal models could be used to analyse variation and not only arithmetic averages, this has not yet been done. What we know of SES differences in kinship overall comes primarily from empirical data (e.g. Verdery and Margolis 2017).

Some surveys collect ego-centred kinship information to varying degrees. Surveys used for this purpose include the Netherlands Kinship Panel Study (NKPS); the Ouders en kinderen in Nederland [Adults and children in the Netherlands] survey; and to a lesser extent, the international Generations and Gender Survey (GGS); the Survey of Health, Ageing and Retirement in Europe (SHARE) that investigates older people; and complex surveys such as the Panel Analysis of Intimate Relationships and Family Dynamics (PAIRFAM) in Germany and the Panel Study of Income Dynamics (PSID) in the US. The NKPS was used in one of the most ambitious mappings of kinship networks (Dykstra and Komter 2006), but that study did not cover SES. An ambitious attempt to determine socio-economic and racial differences was carried out by Daw et al. (2016). They used PSID data together with imputation methods to establish differences by SES in counts of different kin. Goldstein and Warren (2000) examined kinship networks that bridged different SES groups as a counterweight to how social stratification creates social closure. De Bruycker (2008) used the NKPS to explore whether SES differences in kinship structure served as a mediator for observed frequencies in contact with kin. Older studies have used labour-intensive ethnographic methods, collecting quantitative egocentric kinship data through self-reports and examining variation across race and SES (Young and Willmott 1957; Schneider and Smith 1973; Schneider and Cottrell 1975).

Finally, register-based studies have examined different aspects of kinship demographics using a cross-sectional approach; some of these have covered SES differences in narrow aspects of kinship. Lundholm and Malmberg (2009) analysed the prevalence of having four generations of overlapping kinship at age 55, with some focus on SES differences among 55-year-olds. Kolk et al. (2023) described Swedish biological kinship across cohorts

in 2018 but did not study variation by SES. Kolk (2017) investigated SES differences in geographic distance and survival of different kin from childhood to age 37. Ongoing research in the Netherlands using register data (Van der Laan et al. 2023) is an emerging source of data for kinship demography. Linked censuses also show great promise for future kinship research (Bailey et al. 2022).

Data and method

Data

We used national population administrative registers covering Sweden's entire population. The registers cover monthly data on births and deaths and individuals are linked through unique personal identification numbers. We examined kinship networks from the perspective of all men and women born in Sweden in 1975, using digitized data from the registers for 1932–2020. The oldest kin were born in the late nineteenth century, and observation in our registers was conditioned on survival to 1960.

For the 1975 cohort, we first constructed each individual's (i.e. index person's) consanguineous kinship structures by using birth records linked across children and their biological parents, a process which can be repeated across multiple generations to create full kinship networks. Parent–child links were first traced upwards to identify a first (oldest) generation: via the index person's mother and father, we identified the index person's maternal and paternal grandparents. After locating this grandparental generation, parent–child links were traced downwards: through the index person's grandparent, we identified the index person's maternal and paternal aunts and uncles, and from aunts and uncles we derived cousins. The same method was used to trace younger kin, such as children and nieces/nephews. Having counted the total number of kin in our index cohort at birth, we took the subsequent dates of births and deaths of every kin member and summed the number of living kin in each subsequent year to compute kin frequencies by age. We counted the number of kin from age 0 to age 45, which corresponded to the years 1975–2020.

We next constructed affinal kinship networks based on partnership information. We considered three groups of in-laws, where the first was the index person's partner. The definition of a partner was two-pronged to account for cultural and legal

norms in Sweden. A marital spouse, identified through yearly civil records, was considered a partner for as long as the marriage lasted. Moreover, we included non-married but currently cohabitating men and women with which the person shared at least one child. We used this definition of a partner to calculate the frequency of having a partner and also for linking our index persons to affinal kin. The second group of in-laws comprised those connected through this partner: the partner's parents (mother-/father-in-law) and siblings (brothers-/sisters-in-law). The third class of in-laws, connected through the index person's siblings, consisted of the partners of those siblings (which we refer to as siblings' partners, to avoid confusion with partners' siblings, which we refer to as brothers-/sisters-in-law). In contrast to the previous two affinal groups, this third affinal group was linked to the index person through their siblings (not through their partner).

Our definition of affinal kinship, from the perspective of the index cohort, is qualitatively different from that of consanguineous kin in that we counted affinal kin and partners only for as long as the index person was still in that partnership, in addition to the affinal kin being alive. Union dissolution—that is, divorce (or residential separation from a partner with a shared child)—dissolves the partner link according to our definition. For example, an index person had zero parents-in-law if the person had separated from their partner. The index person may have regained (a different set of) parents-in-law at a later age if they formed a new partnership. In sum, our study included parents, children, siblings, half-siblings, grandparents, grandchildren, cousins, aunts, uncles, nieces, and nephews (the consanguineous kinship network) and also partners, parents-in-law, siblings-in-law, and siblings' partners (the affinal kinship network). Parents-in-law not residing in Sweden were not enumerated (the shares of foreign-born partners were 7.8, 6.8, 6.9, and 7.9 per cent, in the lowest to highest income quartiles, respectively).

In addition to enumerating the age-specific stock of living kin as just described, we compared vital statistics for the 1975 index cohort with the (average) vital statistics for other kin types (e.g. mothers, grandfathers), as we show at the beginning of the Results section. Dimensions of vital statistics that we compared included their cohort, age at first birth, average number of children, proportion childless, proportion ever married, and proportion ever separated. We also made these comparisons based on income and education.

Study population

We defined our population as index persons born in Sweden in 1975 to Swedish-born parents. We chose the 1975 cohort and the Swedish-born sample restriction because this maximized both kinship coverage and representativity, given the data available in the registers. For this cohort, we examined nearly all of the index persons' births and linked them to most of their grandparents (this was also necessary to link the index persons to their aunts, uncles, and cousins). Our population was further conditioned on both grandmothers being identified. Both grandfathers' and grandmothers' parent-child links could be used to identify kin; however, we were more likely to identify grandmothers, as they were born later, and this avoided issues of missing data on paternity. While we are not aware of any better alternative material for analysing the present topic than the Swedish registers, this source still did not allow us to create genealogies for all our index cohort members. Yet, as seen in supplementary Table A1, we were able to identify both grandparental links for a high proportion of our 1975 cohort. Coverage ranged from 92.5 per cent for the first income quartile to 94.2 per cent for the fourth income quartile. In comparison, coverage for the 1968 birth cohort was only 75 per cent. Parent-child linkage information in Swedish registers started in 1932 (and was partial for the following two to three years). This means that grandparents of parents born before 1932 could not be observed and could not be used to form links to aunts and uncles or cousins. Using the 1975 index cohort we were usually able to link individuals to their grandparents if the parents were aged 41 or younger. This meant we could capture nearly all mothers and most fathers (different ages are evaluated in Kolk et al. 2023). Our data were also conditioned on survival to 1960, the first year for which the census is included in Statistics Sweden's digitized registers. This survival condition was critical for grandparents and was necessary for connecting index individuals to kin such as aunts, uncles, and cousins. Grandparents who had children after 1932 must therefore have survived to 1960 (approximately around age 60 for an individual who had children in the early 1930s).

Choosing a later index cohort would have increased the share of the birth cohort with full kinship links to older generations. However, it would also have decreased the age of the last observation and hence produced a loss of information

about children, nieces/nephews, and in-laws not yet added/born by that age. Observing the extended development of kinship across the life course is especially important when analysing differences in social stratification in kinship, as entry to parenthood occurs later among high-SES groups. However, to give an idea of fluctuations across cohorts, we analysed SES differences in kinship size at age 35 for the 1973–85 birth cohorts (and also for the 1961–85 birth cohorts but excluding grandparents, aunt/uncles, and cousins).

Finally, as with most other observational studies, we could not measure kin that were not registered as living in Sweden; we could observe only kin linked through marriage and biological childbearing (excluding adoptive parents and cohabiting partners without shared children), and we could capture only partially the experiences of same-sex couples. Same-sex marriages are uncommon in this cohort, but we included spouses (and affinal kin) in our analysis for marriages formed after the legalization of same-sex marriage in Sweden in 2009. The study population and the validity of genealogies are described and discussed in more detail in the supplementary material (part one).

We operationalized SES by using annual income (earnings) data obtained from taxation registers. For the 1975 birth cohort, we measured earnings at ages 39, 40, and 41. For this population, and for men and women separately, we created separate income percentiles at ages 39, 40, and 41. We then used the highest income rank achieved during those three years. Finally, this income rank was binned into quartiles, giving four income rank groups. We also repeated our analysis across groups based on individuals' highest education level at age 45, drawn from Swedish educational registers. The categories correspond to ISCED levels 0–2 (basic education, lower-secondary or short/interrupted upper-secondary education), 3 (upper-secondary education), 4–5 (post-secondary or short-cycle tertiary education), and 6–8 (bachelor's degree or equivalent, and above) (UNESCO 2012).

Results

First, we describe the demographic behaviour of our index cohort and their kin of different types, in total and across the SES of the index generation. Second, we describe the observed average number of living specific kin members for male and female index cohort members over the life course

by SES. Thereafter, we show how different types of kin contribute to the total size of the kinship network and its dispersion at ages 0–45. We then break down the difference between the highest and lowest income quartiles of the 1975 cohort in terms of total number of kin, and we demonstrate the proportional importance of each kin type to this overall SES difference. Finally, we analyse this SES gradient at age 35 for the index cohort and across birth cohorts. In the supplementary material (Figures A1–A22), we complement the main results with analyses where we outline the full population distribution of kinship size by age and SES, contrast the other income quartiles, vary the inclusion criteria for kin members, and use education level instead of income as the stratifying variable.

Demographic behaviour of kin

Table 1 depicts the differences in demographic measures for both the index person and their kin members by income quartile of the index cohort member. For kin categories with multiple members (e.g. cousins) the numbers refer to the average value. We find that age at first birth increases and fertility decreases across generations, from the grandparental to the index generation. Note, however, that our members of our index generation are not conditioned on childbirth, whereas grandparents and parents are and thus will have more children on average. The grandparental and parental generations of the low-income index population display higher fertility and lower age at first birth than those from higher-income groups. Aunts and uncles in lower-SES groups have children earlier in life and also have more children than those in higher-SES groups, although the effects are rather moderate. For the index cohort and their siblings, we find only small SES differences in fertility. However, members of lower-SES groups are less often married and more frequently childless and/or divorced. Supplementary Tables A2 and A3 indicate that these patterns are similar for men and women, with the exception that in terms of fertility, members of the index cohort and their siblings show a negative SES gradient for women but a positive gradient for men.

In sum, from the basic demographic measures in Table 1, we can deduce that socio-demographic differences across the kinship network are likely to be moderate. Moreover, we can expect existing SES gradients in kinship structure to originate

Table 1 Vital statistics for the 1975 Swedish-born birth cohort (index cohort) and their kin, by income quartile of index cohort (measured around age 40)

	Income quartile	<i>N</i>	YoB ¹	AFB ²	NrCh ³	Childl ⁴	Marriage ⁵	Divorce ⁶	Mortality ⁷
Index cohort	All	78,127	1975	29.47	1.69	19	55	8	n.a.
	1	20,112	1975	29.13	1.62	24	46	9	n.a.
	2	19,649	1975	28.94	1.71	18	52	8	n.a.
	3	19,426	1975	29.44	1.68	18	56	8	n.a.
	4	18,940	1975	30.38	1.74	15	64	7	n.a.
Mothers	All	77,545	1948	23.59	2.54	0	36	9	5
	1	20,053	1948	23.03	2.63	0	38	11	6
	2	19,587	1948	23.22	2.58	0	38	9	5
	3	19,378	1948	23.66	2.51	0	37	8	4
	4	18,875	1947	24.48	2.43	0	32	7	4
Fathers	All	77,462	1945	25.91	2.45	0	20	5	7
	1	20,034	1945	25.58	2.51	0	21	6	8
	2	19,571	1945	25.70	2.47	0	20	5	7
	3	19,370	1945	25.91	2.42	0	20	4	6
	4	18,864	1945	26.46	2.38	0	17	4	5
Grandmothers	All	132,919	1918	25.80	2.88	0	n.a.	n.a.	2
	1	35,702	1919	25.43	2.99	0	n.a.	n.a.	3
	2	35,080	1919	25.54	2.94	0	n.a.	n.a.	2
	3	34,973	1918	25.87	2.86	0	n.a.	n.a.	2
	4	34,296	1918	26.37	2.72	0	n.a.	n.a.	2
Grandfathers	All	119,094	1915	28.72	2.55	0	n.a.	n.a.	3
	1	31,922	1916	28.46	2.63	0	n.a.	n.a.	4
	2	31,502	1916	28.53	2.60	0	n.a.	n.a.	4
	3	31,405	1915	28.81	2.53	0	n.a.	n.a.	3
	4	30,612	1915	29.10	2.42	0	n.a.	n.a.	3
Aunts/uncles	All	284,825	1948	25.18	1.97	15	28	6	7
	1	81,350	1948	24.89	2.00	15	29	7	7
	2	78,214	1948	24.98	1.98	15	28	6	7
	3	74,723	1948	25.25	1.95	15	28	6	6
	4	67,608	1947	25.68	1.93	15	27	5	6
Sibling(s)	All	104,082	1975	28.78	1.78	16	59	10	n.a.
	1	27,253	1974	28.06	1.77	18	57	11	n.a.
	2	26,753	1974	28.35	1.79	16	57	10	n.a.
	3	25,840	1975	28.94	1.77	16	59	9	n.a.
	4	24,625	1975	29.84	1.76	15	63	8	n.a.

¹Mean year of birth.²Mean age of first birth.³Mean number of children born by age 40.⁴Percentage with no children born by age 40.⁵Percentage ever married by age 40.⁶Percentage ever divorced by age 40.⁷Percentage dead by age 60 (only cohorts where the majority were potentially aged 60 in 2018).

Notes: We only observed kin conditional on survival to 1960. Civil status register information was not available for the grandparent generation. If individuals had not yet reached age 40/60 they were not part of the calculation for that variable. ‘n.a.’ means not available. *N* refers to total number of individual kin members. Because individuals can have kin relationships with more than one index individual and these index individuals may be in different income groups, the *N* of each income group adds up to a greater amount than the total shown in the table. Quartile 1 represents the lowest income group and quartile 4 the highest.

Source: Authors’ analysis of data from Swedish administrative registers.

mostly from higher and earlier fertility among parents and grandparents with low SES (creating more horizontally extended kinship networks), alongside higher marital and union stability among those with high SES. In order to analyse these assertions, we next examine the occurrence of living kin across the life course from the index person’s perspective.

Average number of living kin

In this subsection, we show the average number of kin of different types that individuals have. We first show kin that are biologically related to the index person (consanguineous kin) and then in-laws, that is, the kin of the index person’s partner (if they have one) and siblings’ partners. We first discuss

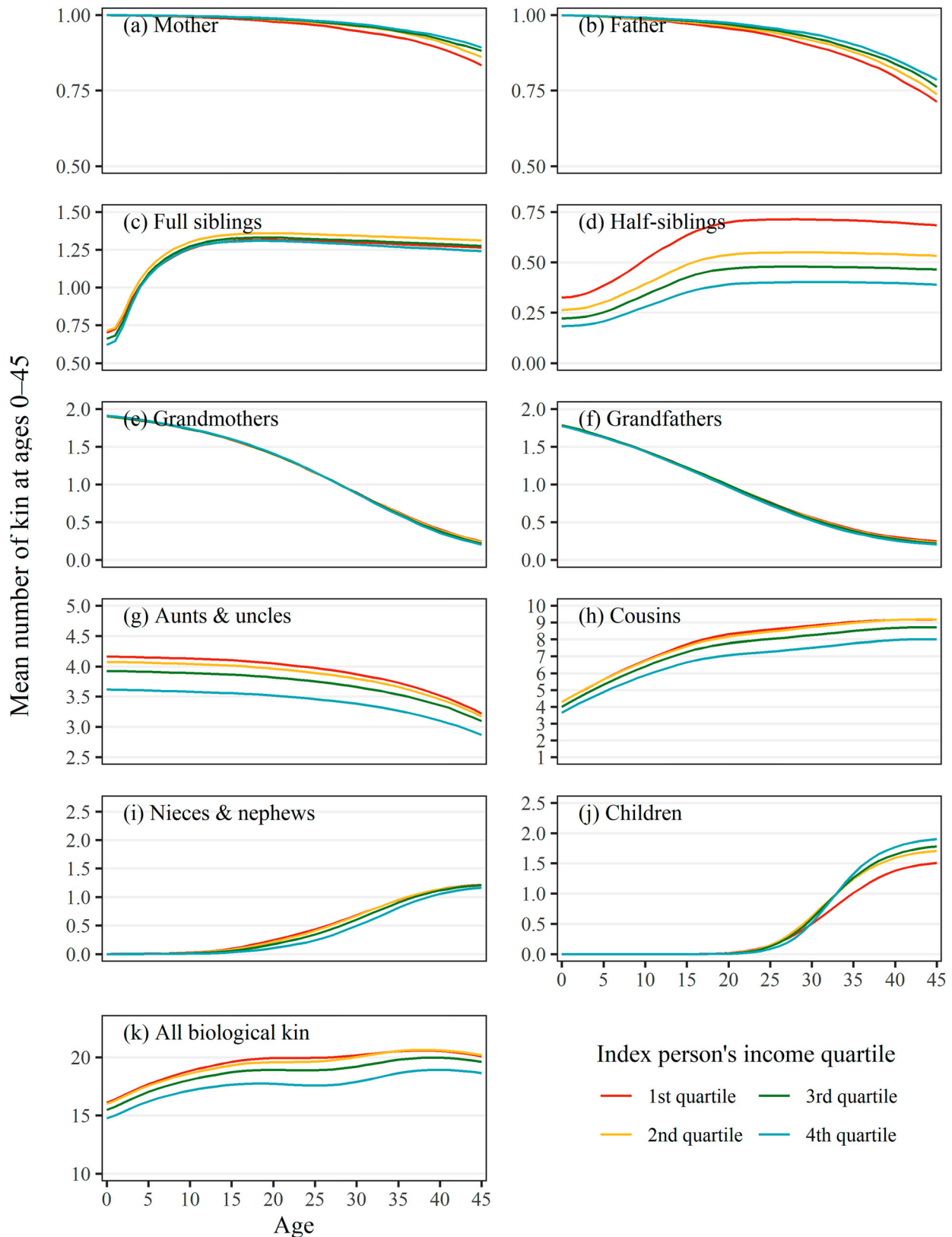


Figure 1 Mean number of consanguine kin at ages 0–45 for the 1975 Swedish-born birth cohort, by income quartile measured around age 40: men

Notes: Quartile 1 represents the lowest income group and quartile 4 the highest. This figure is best viewed online in colour.

Source: Authors' analysis of data from Swedish administrative registers.

men and then women, as men often display larger socio-economic gradients. [Figure 1](#) shows the mean number of consanguineous kin by type across the life course for men, separately for each income quartile. For most kin types, the differences across income are rather small. Several features stand out. First, low-income men have more horizontal kin, such as cousins, aunts, and uncles; this is due to higher fertility in previous generations in low-income men's kinship networks. Low-income men also have more half-siblings due to higher union dissolution in their kin network. Finally, there is a weak positive gradient in kin for a few other types of kin: high-income men have more children and are slightly more likely to have a living parent.

[Figure 2](#) portrays the mean number of affinal kin for men. The number of affinal kin expands rapidly in the early 20s, once individuals begin finding a partner, with some earlier affinal kin obtained through their siblings' partners. We find large differences by SES in the probability of having a partner. As a consequence, patterns tied to partnerships and union stability—and in relation to having affinal kin—exhibit strong income differences. Low-income men are less likely to be partnered at older ages and thus have fewer parents-in-law. For other type of affinal kin, low-income men's lower partnering but higher fertility in their kin networks results in minor differences by income. In general, high-income men have children and form partnerships later in life; this is also reflected in their kin's behaviour. The same patterns are found for their kin in an attenuated form. In contrast, low-income men experience events earlier in life, and their descendants display substantially higher fertility, resulting in larger extended kinship networks.

Broadly, the results for women are quite similar to those for men. [Figure 3](#) outlines the social gradient in consanguineous kin for women. For most groups, we find comparable numbers of kin for women, with the important exception of children, where the SES gradient is opposite to that of men. The lowest-earning women have the highest numbers of children and highest-earning women the lowest. In [Figure 4](#), we can see the average number of in-laws for women. We find a much weaker social gradient in having a partner for women in contrast to that found for men ([Figure 2](#)), although high-SES women are slightly less likely to have a partner early in the life course and more likely to have one later. As a consequence, there is no distinct SES gradient in the average number of brothers- or sisters-in-law after early adulthood, and SES differences are confined

to the lowest-earning women, who have somewhat fewer partners and parents-in-law.

In our supplementary Figures A8–A11, we show figures equivalent to [Figures 1–4](#) but across educational groups instead of income quartiles. All patterns described in [Figures 1–4](#) are present, and the socio-economic gradient is somewhat more pronounced. For example, the least educated men have about two more cousins than those with tertiary education, and the positive gradient in having mothers or fathers still alive at age 45 is more pronounced by education than by income.

Differences in total number of kin

Having shown how the SES groups differ for specific categories of kin, in [Figure 5](#) we next examine how the total number of kin differs across the life course for all men and women (i.e. not stratified by income). The figures are stacked area plots, where the total height indicates the total number of kin that individuals have at each age. The SDs of the total number of kin at specific ages are displayed in parentheses. Figures are best viewed in colour online: here, colours represent generations and affiliations, where kin in the same generation are shown in similar colours (e.g. parents, aunts, and uncles are shown in green gradients).

The total number of kin increases over the life course, with a maximum between ages 35 and 40, at about 23 kin members on average. Total kinship size depends primarily on extended horizontal kin, where cousins in the same generation contribute to the largest numbers, followed by aunts and uncles one generation older than the index generation. The number of consanguineous kin (including grandparents, aunts, uncles, parents, and siblings) is rather stable over the life course, although a rising number of cousins increases the total kinship network as the cohort members age. At around age 20, the index generation also start to acquire their own kinship network (in addition to that of their parents) through their own children, partners, and in-laws, thus adding to their total number of kin. At approximately the same time, their siblings also start having children.

We also examine the range of the average number of kin (as indicated by the SDs in [Figure 5](#)), which is substantial and varies considerably across the life course. At birth, the SD for average total kin members is about seven and increases to about 10 by age 45. Supplementary Figures A1 and A2 show the average number of kin by index person's income quartile. The age-related patterns in the

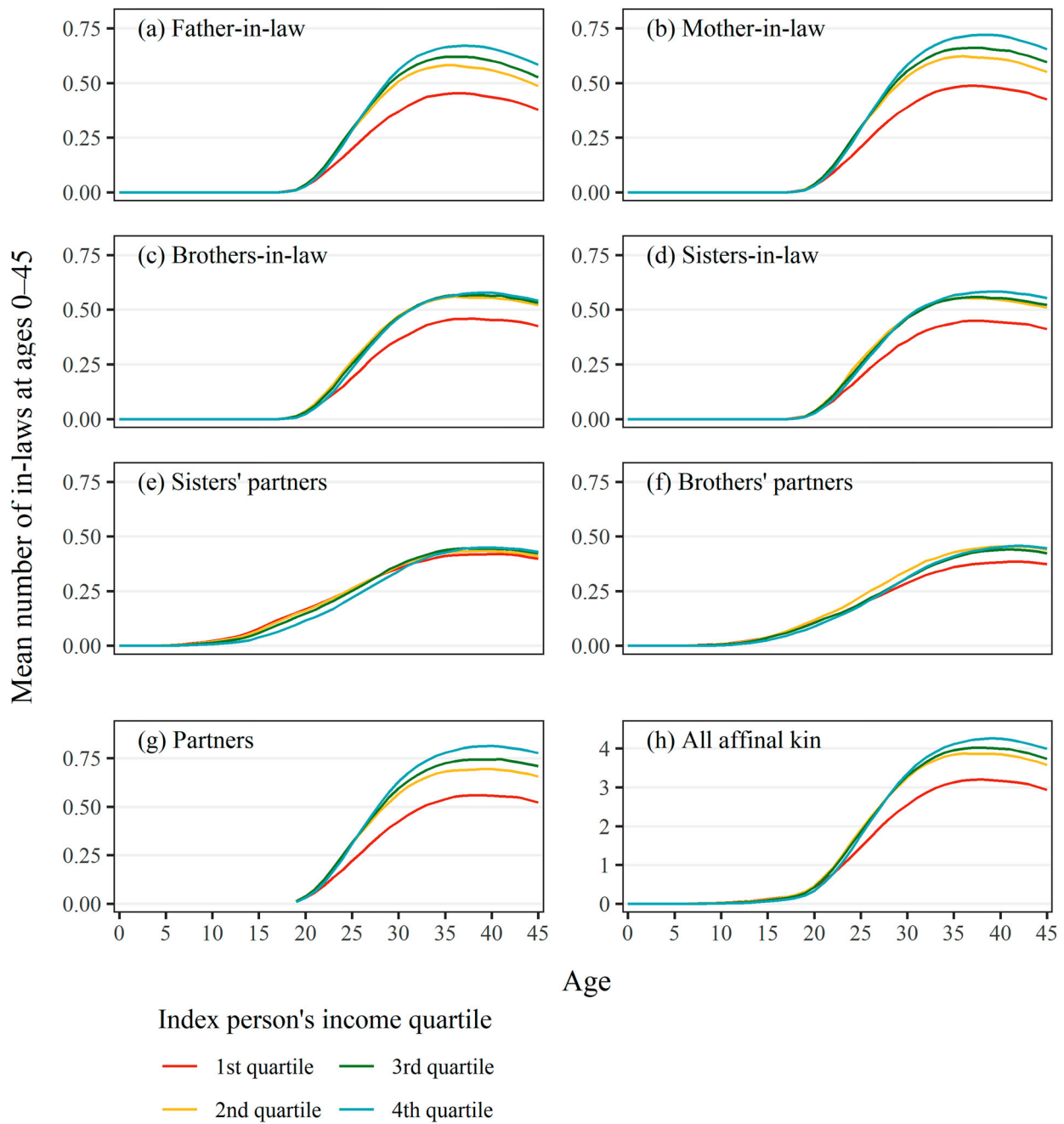


Figure 2 Mean number of affinal kin and partners at ages 0–45 for the 1975 Swedish-born birth cohort, by income quartile measured around age 40: men

Notes: Quartile 1 represents the lowest income group and quartile 4 the highest. This figure is best viewed online in colour.

Source: As for [Figure 1](#).

growth and decline of kin are rather similar across income quartiles. Supplementary Figures A3 and A4 further suggest that the dispersion in number of kin is very large, especially compared with the variation across SES. Thus, most variation in kinship is found across individuals within the same SES groups, not between SES groups.

Next, we examine how specific kin types contribute to SES differences in total number of kin. In [Figure 6](#)

we compare the number of kin between the first and the fourth income quartiles at each age. A positive value on the y-axis indicates that the first income quartile has more kin than the fourth at a specific age, in other words, that poorer individuals have more kin than richer individuals. The total SES difference at a given age is the sum of positive and negative values and is indicated by the red line. The coloured areas show the difference between the two income

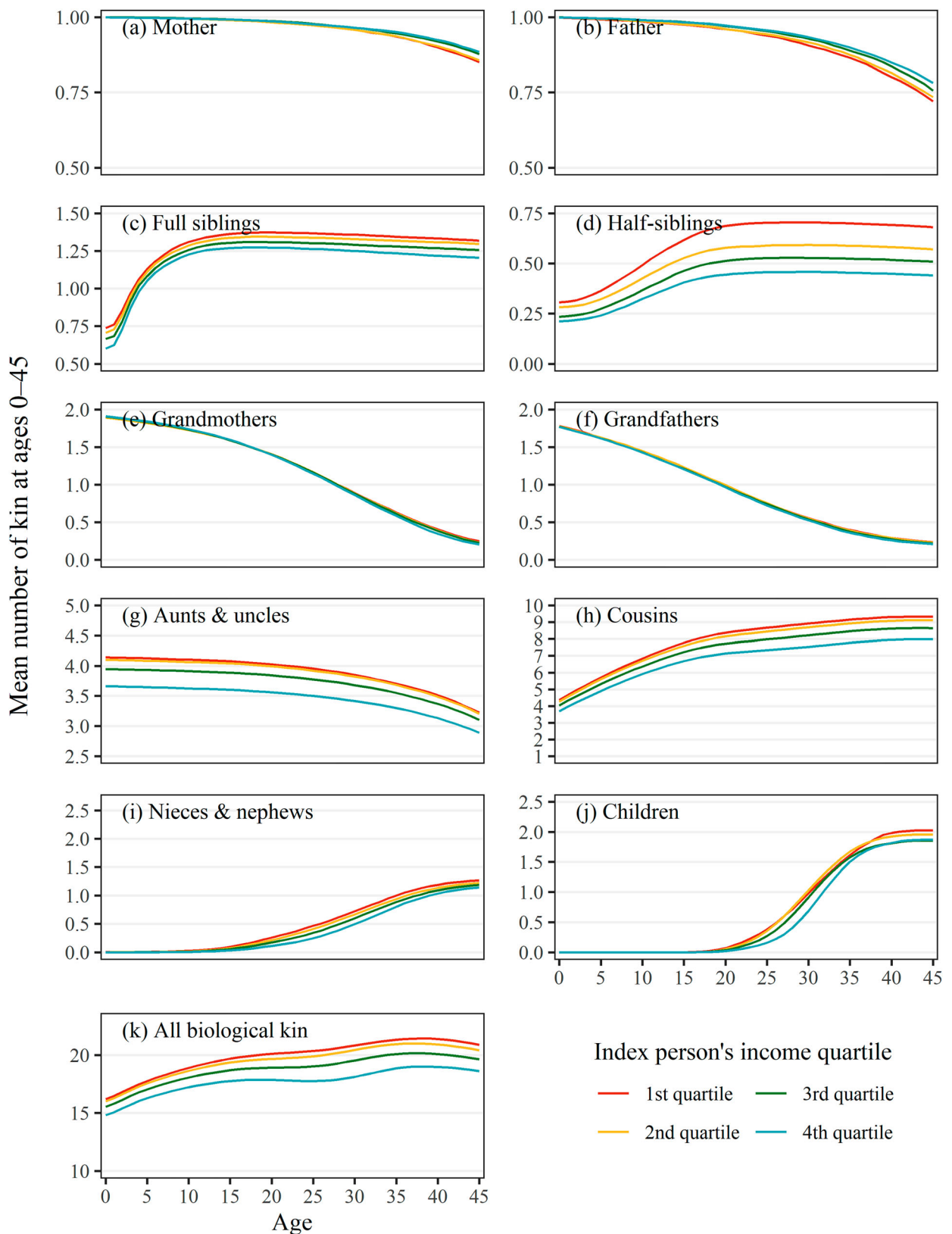


Figure 3 Mean number of consanguineous kin at ages 0–45 for the 1975 Swedish-born birth cohort, by income quartile measured around age 40: women

Notes: Quartile 1 represents the lowest income group and quartile 4 the highest. This figure is best viewed online in colour.

Source: As for Figure 1.

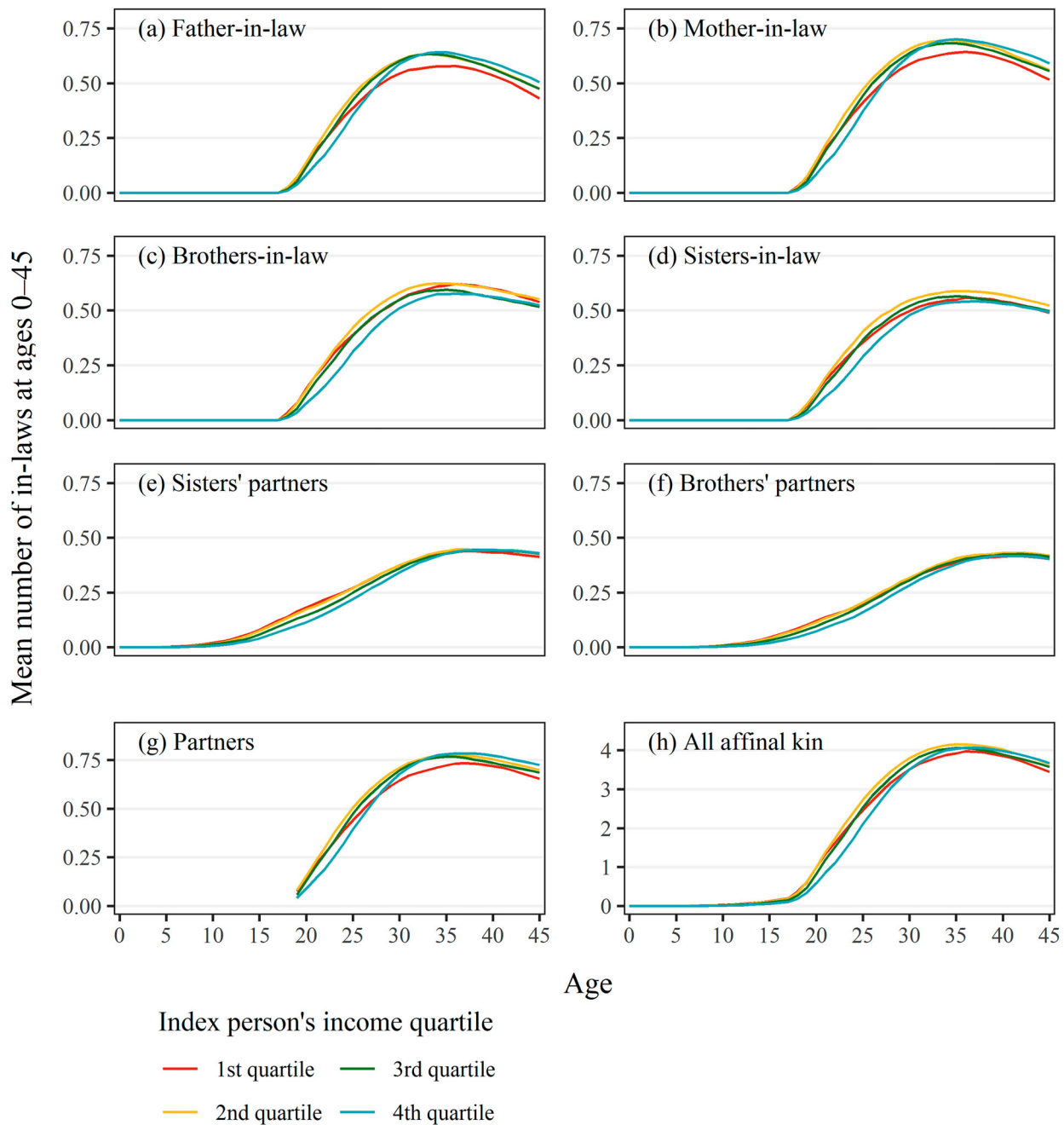


Figure 4 Mean number of affinal kin and partners at ages 0–45 for the 1975 Swedish-born birth cohort, by income quartile measured around age 40: women

Notes: Quartile 1 represents the lowest income group and quartile 4 the highest. This figure is best viewed online in colour.

Source: As for Figure 1.

quartiles for specific kin types. Areas reaching above the horizontal line (positive values) signal that these specific kin types are more numerous, on average, among the lowest earners compared with the highest earners. Areas below the horizontal line (negative values) represent kin types that are more numerous among the high earners.

Two groups of kin contribute most to the SES differential between the two income groups. The

first group—half-siblings, aunts and uncles, and, in particular, cousins—is more numerous among the lowest income quartile across all ages. In contrast, affinal kin are more numerous among the highest income quartile at older ages (when more high-income individuals are partnered) for men but less clearly so for women. Other relations have a marginal impact on the total kinship differential across SES groups. We also see that the socio-economic

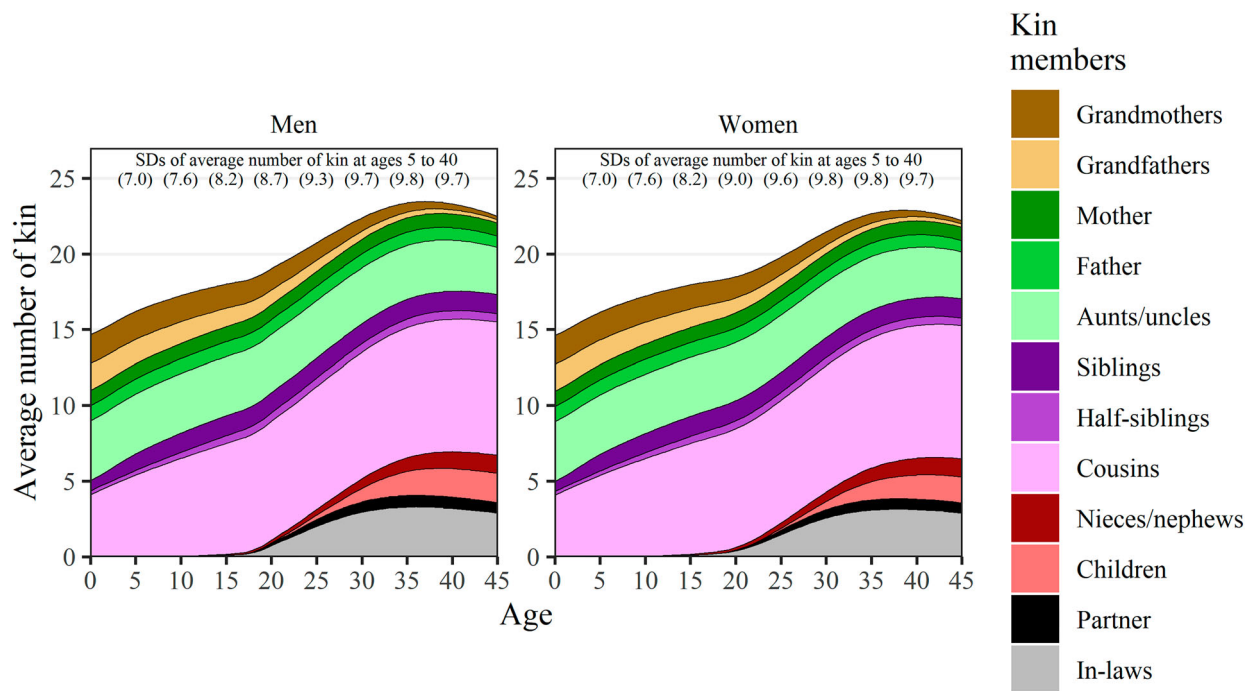


Figure 5 Mean number of all consanguineous and affinal kin at ages 0–45: men and women in the 1975 Swedish-born birth cohort

Notes: Standard deviations of the total number of kin are shown in parentheses at every fifth year for ages 5–40. This figure is best viewed online in colour.

Source: As for Figure 1.

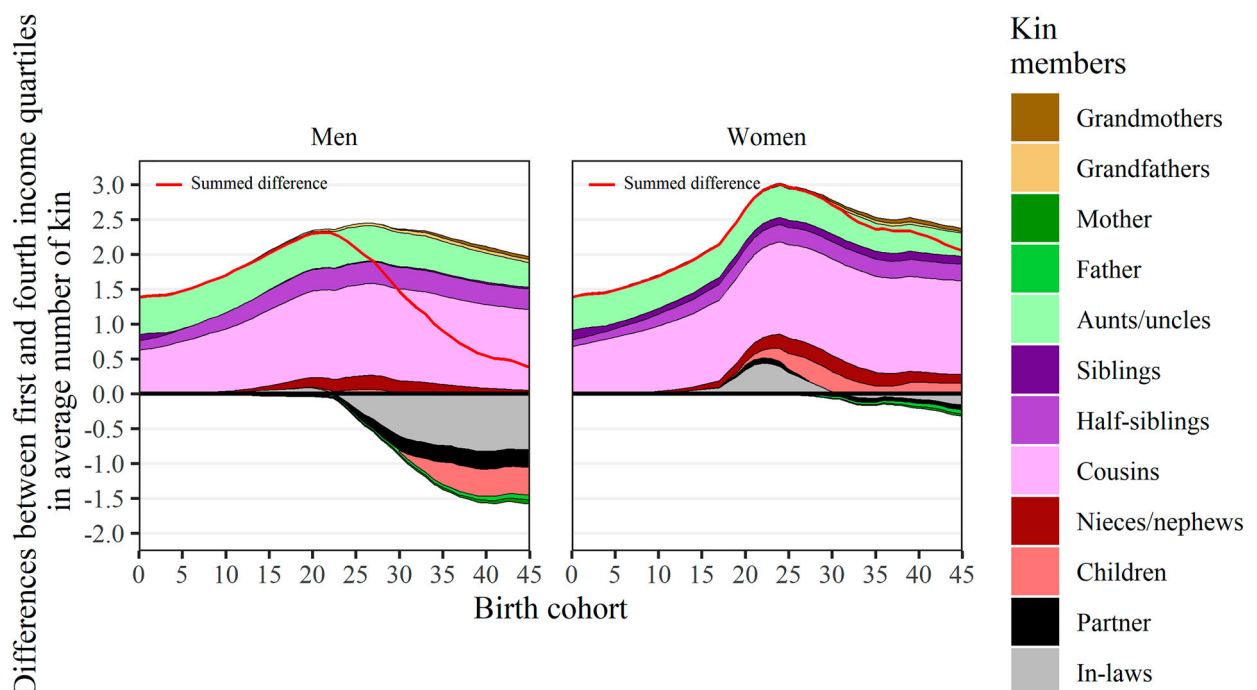


Figure 6 Decomposition of kin group distributions to the difference in the average number of kin between the fourth and first income quartiles, at ages 0–45: men and women in the 1975 Swedish-born birth cohort

Notes: A positive value indicates that the first income quartile (poorest individuals) has more kin than the fourth (richest individuals) at a specific age. This figure is best viewed online in colour.

Source: As for Figure 1.

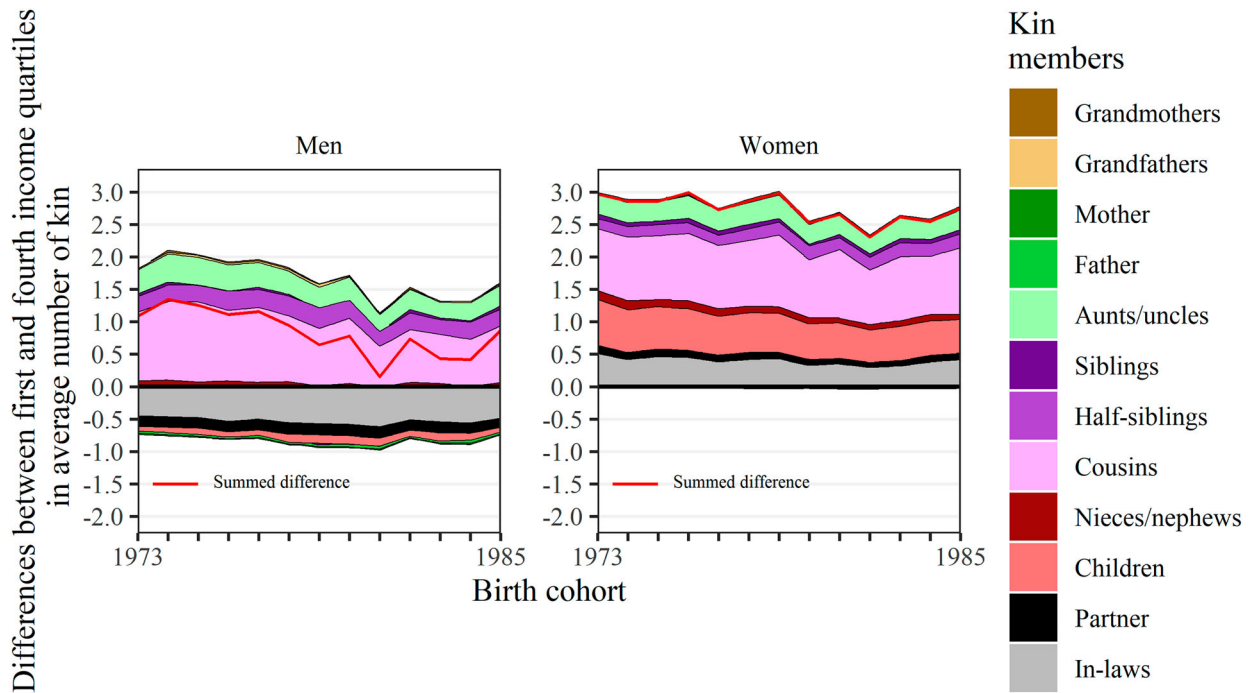


Figure 7 Decomposition of kin group distributions to the difference in the average number of kin between the fourth and first income quartiles, at age 35: men and women in the 1973–85 Swedish-born birth cohorts

Notes: The x-axis corresponds to the different birth cohorts measured at age 35 rather than the age for a single cohort. A positive value indicates that the first income quartile (poorest individuals) has more kin than the fourth (richest individuals) at a specific age. This figure is best viewed online in colour.

Source: As for Figure 1.

gradient in kinship differs somewhat for men and women, although only later in life, which is because we measure the income of our index generation only in adulthood. Own children add to the kinship differential positively for women but negatively for men. For both men and women, low-income groups have children earlier, and high-SES groups have relatively more children as they age. Low-SES men experience a stronger decline in in-laws with age than low-SES women. For women, we see that those with low SES have consistently more kin over the life course, while for men, the SES gap shrinks after age 20 (as members of the index cohort age) and approaches zero, as high-income men are increasingly more likely to be partnered and have many children as they approach age 45. The summed SES difference (marked by the red line) peaks at about 2.4 kin for men and 3.0 for women, corresponding to between about one-fifth to one-quarter of an SD.

Supplementary Figures A5 and A6 instead contrast the second and third quartiles with the fourth quartile; they indicate that the SES gradient remains but decreases in magnitude when we compare medium earners with the richest quartile.

Parts of the SES gradients we observe are due to how we define kinship. We illustrate briefly how the socio-economic gradient in kinship responds to different inclusion criteria, including more narrow definitions of kinship, in supplementary Figure A7. The gradient decreases with a narrower definition of kin, but the lower-SES groups have more kin than other groups in all different specifications. Figures A8–A18 in the supplementary material show the SES gradients in kinship size using level of education instead of income. The SES gradients measured by education are more pronounced compared with income differences. For example, Figure A12 show that primary-educated women have 5.6 more kin-members (around half an SD) than tertiary-educated women at age 25.

Are the patterns seen in the 1975 cohort representative of adjacent cohorts? And will the patterns and SES gradients look different for more recent cohorts, where the share of missing grandparents (about 7 per cent in the 1975 cohort) is much lower? In Figures 7 and 8, we focus on change across birth cohorts in SES differences in number of kin. Not all recent cohorts have reached age 45 by the end of our observation period. Therefore, we study the time up to age

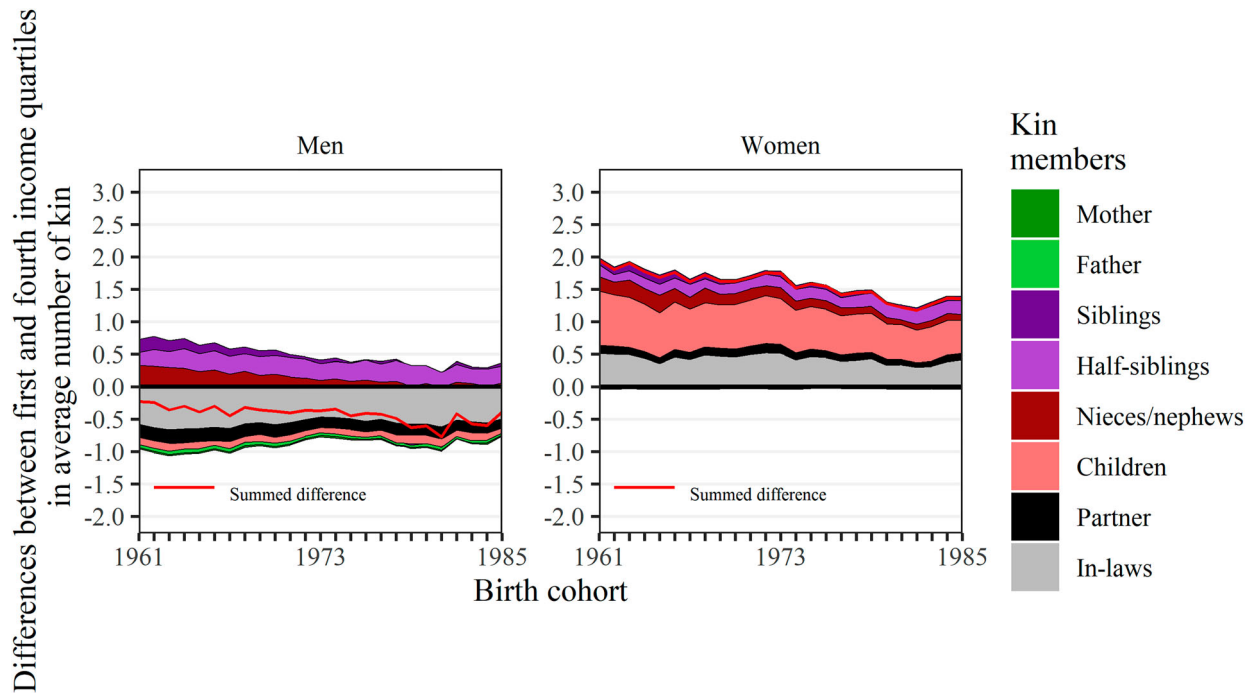


Figure 8 Decomposition of kin group distributions to the difference in the average number of kin (excluding grandparents, aunts, uncles, and cousins) between the fourth and first income quartiles, at age 35: men and women in the 1961–85 Swedish-born birth cohorts

Notes: A positive value indicates that the first income quartile (poorest individuals) has more kin than the fourth (richest individuals) at a specific age. This figure is best viewed online in colour.

Source: As for Figure 1.

35 and measure income quartiles between ages 33 and 35. Figure 7 examines how different types of kin contribute to SES differences in total number of kin at age 35 for the cohorts born from 1973 to 1985. Please note that the x-axis in Figure 7 corresponds to the different birth cohorts measured at age 35 rather than the age for a single cohort. In Figure 7, across all cohorts, members of the lowest income quartile have somewhat more kin on average, and this is driven by aunts, uncles, cousins, and half-siblings. Low-SES men have fewer kin stemming from their own and siblings' reproductive and marital behaviour, resulting in fewer partners and in-laws compared with high-SES men; this is not, however, the case for low-SES women. This pattern remains salient but weakens slightly in magnitude across birth cohorts, likely reflecting the decrease in grandparental fertility. Figure 8 uses an even longer perspective and analyses SES differences in number of kin (excluding grandparents, aunts, uncles, and cousins) for cohorts born 1961–85. Here, we can examine earlier cohorts because grandparents are no longer included. Across the 25 birth cohorts, we see the same consistent SES pattern. When cousins, aunts, and uncles (who we found to be more numerous among the low-SES

group in the preceding analyses) are no longer counted, low-SES men have somewhat fewer kin than high-SES men across all the 25 birth cohorts. In contrast, low-SES women have more kin across all cohorts due to higher own fertility. These differences decline somewhat across birth cohorts. Supplementary Figures A19–A22 give the mean number of kin at age 35 across birth cohorts by income quartile, for men and women, respectively.

Discussion

In this study, we used national-level register data on parent–child linkages and partnership information, along with data from tax registers, to create near-complete kinship networks for entire birth cohorts. We analysed how kinship differed across socio-economic groups and which demographic forces mattered most for SES differences in kinship.

We demonstrated that overall differences in kinship were rather moderate across socio-economic groups in Sweden for the studied cohorts. The lowest income quartile in our study population that we analysed in most detail—the 1975 birth cohort—had on average, around two more kin members than the

highest income quartile, which corresponds to roughly one-fifth of an SD in the average number of kin. These differences related to the types of kin that contributed to observed socio-economic disparities in kinship. For men, the lowest-earning 25 per cent of the 1975 cohort had about 0.5 more aunts and uncles than the highest-earning quartile and about one more cousin. The lowest-earning men had substantially fewer in-laws and fewer children than the highest-earning 25 per cent, almost 1.25 more so at later ages. Together, the differentials in cousins, aunts and uncles, and in-laws accounted for most of the SES gradient in total number of kin. Our findings showed that SES differences in living kin differed across the life course. At younger ages, low-SES men had 1.00–1.75 more kin than high-SES men, although the differences shrank with age. The results showed that socio-economic differences in kin were larger for women: women in the lowest income quartile had 1.75–2.00 more kin across their adult lives compared with the highest-earning quartile. The lowest-earning men, in contrast, had only slightly more kin (about 0.5 more relations) than the highest-earning men at later ages. Our results were broadly similar whether using income or education as stratifying variables, strengthening the conclusion of a socio-economic gradient in kinship frequency, but the gradient was larger when using education level (of the index cohort).

Our analyses pointed towards two primary demographic drivers for social gradients in kinship in our population. First, a large share of socio-economic differences in number of kin stemmed from the timing and quantum of fertility in the grandparental generation. The older generations related to low-SES index individuals had more children and had them earlier, resulting in more aunts, uncles, and cousins. The second proximate cause was SES differences in union stability, fertility, and the timing of union formation and fertility in the index cohort's own generation. Low-SES groups were substantially less likely to have partners but also formed unions earlier. The lower numbers of in-laws and partners were especially prevalent among low-SES men. Since Sweden is a low-mortality population, mortality played only a small role (except for the survival of grandparents). In contrast, intergenerational intervals were somewhat more important: low-SES groups had more densely spaced kinship networks and thus a larger number of living kin earlier in the life course.

From what we have learned from the patterns emerging in our analysis of kinship in Swedish

birth cohorts, what could we use to understand and study the SES gradient in kinship structure in other countries? Our results suggest that a good starting point would be to consider the SES gradients in fertility in the grandparental generation and in own fertility and nuptiality. Other factors to consider are the likely degree of social mobility across generations and variation in marriage and childbearing across SES. Findings will likely vary across contexts with lower or higher social mobility and assortative mating and across settings with more or less pronounced socio-economic differences in demographic behaviour. In this respect, Sweden can be considered a moderate-to-lower-bound estimate for the degree of stratification in kinship structures. Moreover, SES gradients in kinship may look different in contexts with higher inequality between SES groups. For example, the index person's generation may see fewer children, nieces, nephews, and in-laws among low-SES men. In contrast, the SES gradients in fertility may be reversed for the grandparental generation, potentially generating more cousins, aunts, and uncles in the low-SES index population in countries with historically higher SES inequality. Our findings also highlight the importance of sex-specific analyses. Contemporary societies have differed in the gendered nature of their SES gradients in childbearing in the twentieth century. Such patterns will determine cross-national variation in kinship structures.

In general, to assess the degree of socio-economic differences in kinship, it is helpful to contrast cross-SES variance with overall variance in kinship within the population, which we have shown to be substantive. For example, at age 40, one-quarter of the population had over 28 kin members, while one-quarter had fewer than 18 (supplementary Figures A3 and A4). This is consistent with previous research documenting large variations between individuals in the size of kinship networks (Kolk et al. 2023). In contrast, the differences across socio-economic groups were small, although differences by income in number of cousins and in-laws were non-negligible. Yet another consideration is the measure of SES. In our main analysis, we used earnings, but in the supplementary analysis using education level, we confirmed the direction of the SES gradient in kinship for women and men and found it to be substantially larger than when stratifying by income quartile. This may be because education has a stronger influence than earnings on some demographic variables, in particular age at first birth.

Our results have implications for kinship demography. Most models relying on rates instead of

micro-level empirical data assume that kin members' demographic behaviour is uncorrelated or that society consists of strictly endogamous groups. Hence, most existing findings on kinship demography have likely underestimated the dispersion of kin. Although Ruggles (1993) called for testing kinship models using empirical data as far back as three decades ago, data restrictions have prevented this task from being realized. More recent data sources, such as crowdsourced online genealogies (Stelter and Alburez-Gutierrez 2022), have identified the role of selection in such data sources, and future work on such data sources may benefit from taking socio-economic differences and selectivity into account. Our study can quantify this bias, as it has provided baseline values of the number of and variance in living kin in a full population across SES, sex, and age, to use alongside simulations (e.g. Caswell 2020, 2022). For example, if drawing solely from the present study's findings, it may be argued that because the variance within SES groups in number of kin was so much larger than that across SES groups, simulations need not be substantially biased as a result of not considering heterogeneity across SES.

With future high-quality multigenerational data sets (Bailey et al. 2022), our approach can also be used in other contexts, and our findings can be contrasted with other populations with different patterns of stratified demographic behaviour. Hopefully, our study has taken one step towards establishing best practices in kinship demography. For example, we concluded that to study SES gradients in kinship, it appears critical to separate the index person by sex as well as to distinguish between consanguine and affinal kin (see Caswell 2022). Our results are also relevant for work on the consequences of kinship (Agree and Glaser 2009; Margolis and Wright 2017). Research examining the influence of specific types of kin as a facet of social advantage has rarely accounted for the influence of kin being conditioned on kin members existing and the heterogeneity therein across SES. Our research suggested that at least in Sweden, kin types are fairly evenly distributed across social groups, unless in-laws or cousins are of particular interest.

Limits in our data created a number of restrictions for the present study that could be addressed by future research. Because our focus was on index cohorts of Swedish individuals born to Swedish-born parents, the question of how kinship networks among migrants and descendants of migrants are structured, a question that requires extensive data collection to answer. In the current

paper, we focused mostly on demographic differences in observable kin. An equally interesting aspect of socio-economic differences in kinship is whether the practice and meaning of kinship differ across socio-economic strata (Di Leonardo 1987; Strathern 1992). Classical sociological studies have indeed shown that such differences can be huge (Young and Willmott 1957; Schneider and Smith 1973; Sarkisian and Gerstel 2004). However, the approach used in the current paper is poorly suited to studying such aspects of the social dimensions of kinship. To this list of future research we might add further work on the definition of kin, particularly in-laws, who could be extended to include, for example, non-cohabiting partners in couples without children. Future research may also want to explore kinship from the perspective of older individuals, as we followed our index generation only to age 45.

Relatedly, an interesting dimension of kinship that we did not explore in further detail is the geographic distance between kin members (Kolk 2017) and how it differs by SES. Such influences may be considerable, in that SES is shaped by regional employment opportunities, and SES in itself is associated with regional mobility (Chudnovskaya and Kolk 2017). We leave this task for future research. Finally, our analysis was primarily descriptive; we did not directly quantify how stratified demographic behaviour affects a kinship network. Income may be the outcome of fertility rather than the reverse. We did not investigate the role of social mobility directly, and we did not establish the impact of intergenerational correlations in demographic processes (Mare 2011). Future research should aim to provide a better understanding of both why kinship differs by SES and the consequences of SES differences in kinship.

Notes and acknowledgements

- 1 Linus Andersson is based in the Swedish Institute for Social Research, Stockholm University, Sweden. Martin Kolk is based in the Department of Sociology, Demography Unit, Stockholm University.
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- 4 Data availability statement: Access to the population registers on which the study is built is restricted and can be achieved via Statistics Sweden through purchase, research application, and ethics approval. Data for our processed results can be accessed at <https://osf.io/preprints/socarxiv/brcxt>.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

- Agree, Emily and Karen Glaser. 2009. Demography of informal caregiving, in P. Uhlenberg (ed), *International Handbook of Population Aging*. Dordrecht: Springer, pp. 647–668.
- Alburez-Gutierrez, Diego, Nicola Barban, Hal Caswell, Martin Kolk, Rachel Margolis, Emily Smith-Greenaway, and Emilio Zagheni. 2022. Kinship, demography, and inequality: Review and key areas for future development, *SocArXiv*. <https://doi.org/10.31235/osf.io/fk7x9>
- Amato, Paul. 1996. Explaining the intergenerational transmission of divorce, *Journal of Marriage and the Family* 58(3): 628–640. <https://doi.org/10.2307/353723>
- Andersson, Linus. 2020. Oh half-brother, where art thou? The boundaries of full- and half-sibling interaction, *Demographic Research* 43(16): 431–460. <https://doi.org/10.4054/DemRes.2020.43.16>
- Andersson, Linus. 2021. Lifetime parenthood in the context of single- and multiple-partner fertility, *Advances in Life Course Research* 47: 100355. <https://doi.org/10.1016/j.alcr.2020.100355>
- Anderson, Lewis R., Paula Sheppard, and Christian Monden. 2018. Grandparent effects on educational outcomes: A systematic review, *Sociological Science* 5: 114–142. <https://doi.org/10.15195/v5.a6>
- Bailey, Martha, Peter Lin, Shariq Mohammed, Paul Mohnen, Jared Murray, Mengying Zhang, and Alexa Prettyman. 2022. *LIFE-M: The Longitudinal, Intergenerational Family Electronic Micro-Database, 2022-03-01*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]. <https://doi.org/10.3886/E155186V2>
- Bengtson, Vern L. 2001. Beyond the nuclear family: The increasing importance of multigenerational bonds, *Journal of Marriage and Family* 63(1): 1–16. <https://doi.org/10.1111/j.1741-3737.2001.00001.x>
- Bengtsson, Tommy, Martin Dribe, and Jonas Helgertz. 2020. When did the health gradient emerge? Social class and adult mortality in southern Sweden, 1813–2015, *Demography* 57(3): 953–977. <https://doi.org/10.1007/s13524-020-00877-5>
- Blossfeld, Hans-Peter. 2009. Educational assortative marriage in comparative perspective, *Annual Review of Sociology* 35(1): 513–530. <https://doi.org/10.1146/annurev-soc-070308-115913>
- Bosworth, Barry. 2018. Increasing disparities in mortality by socioeconomic status, *Annual Review of Public Health* 39: 237–251. <https://doi.org/10.1146/annurev-publhealth-040617-014615>
- Breen, Richard. 2004. *Social Mobility in Europe*. Oxford: Oxford University Press.
- Breen, Richard, John Ermisch, and Satu Helske. 2019. Educational reproduction in Europe: A descriptive account, *Demographic Research* 41(49): 1373–1400. <https://doi.org/10.4054/DemRes.2019.41.49>
- Breen, Richard and Ruud Luijkx. 2004. Social mobility in Europe between 1970 and 2000, in Richard Breen (ed), *Social Mobility in Europe*. Oxford: Oxford University Press, pp. 37–77.
- Bukodi, Erzsébet, Marii Paskov, and Brian Nolan. 2019. Intergenerational class mobility in Europe: A new account, *Social Forces* 98(3): 941–972. <https://doi.org/10.1093/sf/soz026>
- Caswell, Hall. 2020. The formal demography of kinship II: Multistate models, parity, and sibship, *Demographic Research* 42(38): 1097–1146. <https://doi.org/10.4054/DemRes.2020.42.38>
- Caswell, Hall. 2022. The formal demography of kinship IV: Two-sex models and their approximations, *Demographic Research* 47(13): 359–396. <https://doi.org/10.4054/DemRes.2022.47.13>
- Chapman, Simon, Mirka Lahdenperä, Jenni Pettay, and Virpi Lummaa. 2017. Changes in length of grandparenthood in Finland 1790–1959, *Finnish Yearbook of Population Research* 52: 3–13. <https://doi.org/10.23979/fypr.65346>
- Chudnovskaya, Margarina and Martin Kolk. 2017. Educational expansion and intergenerational proximity in Sweden: Developments in geographical distance between young adults and their parents, 1980–2007, *Population, Space and Place* 23(1): 19–73. <https://doi.org/10.1002/psp.1973>
- Daw, Jonathan, Ashton M. Verdery, and Rachel Margolis. 2016. Kin count(s): Educational and racial differences

- in extended kinship in the United States, *Population and Development Review* 42(3): 491–517. <https://doi.org/10.1111/j.1728-4457.2016.00150.x>
- De Bruycker, Trees. 2008. Selection versus structure: Explaining family type differences in contact with close kin, *Journal of Family Issues* 29(11): 1448–1470. <https://doi.org/10.1177/0192513X08318154>
- Di Leonardo, Michaela. 1987. The female world of cards and holidays: Women, families, and the work of kinship, *Signs* 12(3): 440–453. <https://doi.org/10.1086/494338>
- Dykstra, Pearl and Aafke E. Komter. 2006. Structural characteristics of Dutch kin networks, in P. A. Dykstra, M. Kalmijn, T. C. M. Knijn, A. E. Komter, A. C. Liefbroer, and C. H. Mulder (eds), *Family Solidarity in the Netherlands*. Amsterdam: Dutch University Press, pp. 21–42.
- Dudel, C. 2014. *Beiträge zur Bevölkerungswissenschaft: Vol. 45. Vorausberechnung von verwandtschaft: Wie sich die gemeinsame lebenszeit von kindern, eltern und großeltern zukünftig entwickelt. Contributions to demography: Vol. 45. Predicting kinship: How the joint lifetime of children, parents and grandparents will develop in the future*. Opladen, Germany: Verlag Barbara Budrich.
- Edin, Karl A. and Edward P. Hutchinson. 1935. *Studies of Differential Fertility in Sweden*. Stockholm: PS King & Son.
- Erikson, Robert and John Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford: Clarendon Press.
- Furstenberg, Frank. 2020. Kinship reconsidered: Research on a neglected topic, *Journal of Marriage and Family* 82(1): 364–382. <https://doi.org/10.1111/jomf.12628>
- Gavrilov, Leonid A. and Natalia Gavrilova. 2001. Biodemographic study of familial determinants of human longevity, *Population* 13(1): 197–221.
- Goldstein, Joshua R. and John R. Warren. 2000. Socioeconomic reach and heterogeneity in the extended family: Contours and consequences, *Social Science Research* 29(3): 382–404. <https://doi.org/10.1006/ssre.2000.0676>
- Goodman, Leo A., Nathan Keyfitz, and Thomas Pullum. 1974. Family formation and the frequency of various kinship relationships, *Theoretical Population Biology* 5(1): 1–27. [https://doi.org/10.1016/0040-5809\(74\)90049-5](https://doi.org/10.1016/0040-5809(74)90049-5)
- Hällsten, Martin and Martin Kolk. 2023. The shadow of peasant past: Seven generations of inequality persistence in Northern Sweden, *American Journal of Sociology* 128(6): 1716–1760. <https://doi.org/10.1086/724835>
- Härkönen, Juho and Jaaps Dronkers. 2006. Stability and change in the educational gradient of divorce. A comparison of seventeen countries, *European Sociological Review* 22(5): 501–517. <https://doi.org/10.1093/esr/jcl011>
- Hertel, Florian and Olaf Groh-Samberg. 2019. The relation between inequality and intergenerational class mobility in 39 countries, *American Sociological Review* 84: 1099–1133. <https://doi.org/10.1177/0003122419885094>
- Hertz, Tom, Tamara Jayasundera, Patrizio Piraino, Sibel Selcuk, Nicole Smith, and Alina Verashchagina. 2007. The inheritance of educational inequality: International comparisons and fifty-year trends, *The BE Journal of Economic Analysis & Policy* 7: 1–48. <http://www.bepress.com/bejeap/vol7/iss2/art10/>
- Jalovaara, Marika, Linus Andersson, and Anneli Miettinen. 2022. Parity disparity: Educational differences in Nordic fertility across parities and number of reproductive partners, *Population Studies* 76(1): 119–136. <https://doi.org/10.1080/00324728.2021.1887506>
- Jalovaara, Marika, Gerda Neyer, Gunnar Andersson, Johan Dahlberg, Lars Dommermuth, Peter Fallesen, and Trude Lappegård. 2019. Education, gender, and cohort fertility in the Nordic countries, *European Journal of Population* 35: 563–586. <https://doi.org/10.1007/s10680-018-9492-2>
- Kalmijn, Matthijs. 2013. The educational gradient in marriage: A comparison of 25 European countries, *Demography* 50(4): 1499–1520. <https://doi.org/10.1007/s13524-013-0229-x>
- Kolk, Martin. 2014a. Multigenerational transmission of family size in contemporary Sweden, *Population Studies* 68(1): 111–129. <https://doi.org/10.1080/00324728.2013.819112>
- Kolk, Martin. 2014b. Understanding transmission of fertility across multiple generations – Socialization or socio-economics?, *Research in Social Stratification and Mobility* 35: 89–103. <https://doi.org/10.1016/j.rssm.2013.09.006>
- Kolk, Martin. 2017. A life-course analysis of geographical distance to siblings, parents, and grandparents in Sweden, *Population, Space and Place* 23(3). <https://doi.org/10.1002/psp.2020>
- Kolk, Martin. 2023. The relationship between life-course accumulated income and childbearing of Swedish men and women born 1940–70, *Population Studies* 77(2): 197–215. <https://doi.org/10.1080/00324728.2022.2134578>
- Kolk, Martin, Linus Andersson, Emma Pettersson, and Sven Drefahl. 2023. The Swedish kinship universe: A demographic account of the number of children, parents, siblings, grandchildren, grandparents, aunts/uncles, nieces/nephews, and cousins using national population registers. *Demography* 60(5): 1359–1385. <https://doi.org/10.1215/00703370-10955240>

- Kolk, Martin and Martin Hällsten. 2017. Demographic and educational success of lineages in northern Sweden, *Population and Development Review* 43(3): 491–512. <https://doi.org/10.1111/padr.12091>
- Lappégård, Trude. 2020. Future fertility trends are shaped at the intersection of gender and social stratification, *Vienna Yearbook of Population Research* 18: 1–6.
- Lee, Ronald. 1987. Population dynamics of humans and other animals, *Demography* 24(4): 443–465. <https://doi.org/10.2307/2061385>
- Leopold, Thomas and Jan Skopek. 2015. The demography of grandparenthood: An international profile, *Social Forces* 94(2): 801–832. <https://doi.org/10.1093/sf/sov066>
- Lévi-Strauss, Claude. 1969 [1949]. *The Elementary Structures of Kinship*. London: Eyre & Spottiswood.
- Ludwinek, Anna, Robert Anderson, Daphne Ahrendt, Jean-Marie Jungblut, and Tadas Leončikas. 2017. *Social Mobility in the EU: Eurofound*. <https://www.eurofound.europa.eu/publications/report/2017/social-mobility-in-the-eu>
- Lundberg, Ian. 2020. Does opportunity skip generations? Reassessing evidence from sibling and cousin correlations, *Demography* 57(4): 1193–1213. <https://doi.org/10.1007/s13524-020-00880-w>
- Lundholm, E. and G. Malmberg. 2009. Between elderly parents and grandchildren—Geographic proximity and trends in four-generation families, *Journal of Population Ageing* 2(3): 121–137. <https://doi.org/10.1007/s12062-010-9022-4>
- Malmberg, Gunnar and Anna Pettersson. 2007. Distance to elderly parents: Analyses of Swedish register data, *Demographic Research* 17(23): 679–704. <https://doi.org/10.4054/DemRes.2007.17.23>
- Mare, Robert D. 2011. A multigenerational view of inequality, *Demography* 48(1): 1–23. <https://doi.org/10.1007/s13524-011-0014-7>
- Margolis, Rachel and Ashton M. Verdery. 2019. A cohort perspective on the demography of grandparenthood: Past, present, and future changes in race and sex disparities in the United States, *Demography* 56(4): 1495–1518. <https://doi.org/10.1007/s13524-019-00795-1>
- Margolis, Rachel and Laura Wright. 2017. Healthy grandparenthood: How long is it, and how has it changed?, *Demography* 54(6): 2073–2099. <https://doi.org/10.1007/s13524-017-0620-0>
- Milardo, Robert M. 2009. *The Forgotten Kin: Aunts and Uncles*. Cambridge: Cambridge University Press.
- Murphy, Mike. 1999. Is the relationship between fertility of parents and children really weak?, *Biodemography and Social Biology* 46(1-2): 122–145. <https://doi.org/10.1080/19485565.1999.9988991>
- Murphy, Mike. 2004. Tracing very long-term kinship networks using SOCSIM, *Demographic Research* 10(7): 171–196. <https://doi.org/10.4054/DemRes.2004.10.7>
- Murphy, Mike. 2010. Changes in family and kinship networks consequent on the demographic transitions in England and Wales, *Continuity and Change* 25(01): 109–136. <https://doi.org/10.1017/S026841601000007X>
- Murphy, Mike. 2011. Long-term effects of the demographic transition on family and kinship networks in Britain, *Population and Development Review* 37(supplement s1): 55–80. <https://doi.org/10.1111/j.1728-4457.2011.00378.x>
- Pfeffer, Fabian. 2008. Persistent inequality in educational attainment and its institutional context, *European Sociological Review* 24(5): 543–565. <https://doi.org/10.1093/esr/jcn026>
- Pilkaukas, Natasha V., Mariana Amorim, and Rachel E. Dunifon. 2020. Historical trends in children living in multigenerational households in the United States: 1870–2018, *Demography* 57(6): 2269–2296. <https://doi.org/10.1007/s13524-020-00920-5>
- Rossi, Alicia S. and Peter H. Rossi. 1990. *Of Human Bonding: Parent-Child Relations Across the Life Course*. New York: Aldine de Gruyter.
- Ruggles, Steven. 1993. Confessions of a microsimulator, *Historical Methods: A Journal of Quantitative and Interdisciplinary History* 26(4): 161–169. <https://doi.org/10.1080/01615440.1993.9956352>
- Ruggles, Steven and Susan Brower. 2003. Measurement of household and family composition in the United States, 1850–2000, *Population and Development Review* 29(1): 73–101. <https://doi.org/10.1111/j.1728-4457.2003.00073.x>
- Ruggles, S. and M. Heggeness. 2008. Intergenerational co-residence in developing countries, *Population and Development Review* 34(2): 253–281. <https://doi.org/10.1111/j.1728-4457.2008.00219.x>
- Sarkisian, Natalia and Naomi Gerstel. 2004. Kin support among Blacks and Whites: Race and family organization, *American Sociological Review* 69(6): 812–837. <https://doi.org/10.1177/000312240406900604>
- Schneider, David M. and Calvert B. Cottrell. 1975. *The American Kin Universe: A Genealogical Study*. Chicago: Department of Anthropology, University of Chicago.
- Schneider, David M. and Raymond T. Smith. 1973. *Class Differences and Sex Roles in American Kinship and Family Structure*. Engelwood Cliff, NJ: Prentice Hall.
- Skirbekk, Vegard. 2008. Fertility trends by social status, *Demographic Research* 18(5): 145–180. <https://doi.org/10.4054/DemRes.2008.18.5>
- Skopek, Jan and Thomas Leopold. 2017. Who becomes a grandparent – And when? Educational differences in the chances and timing of grandparenthood, *Demographic Research* 37(29): 917–928. <https://doi.org/10.4054/DemRes.2017.37.29>
- Song, Xi and Robert D. Mare. 2019. Shared lifetimes, multigenerational exposure, and educational mobility,

- Demography* 56(3): 891–916. <https://doi.org/10.1007/s13524-019-00772-8>
- Stelter, Robert and Diego Alburez-Gutierrez. 2022. Representativeness is crucial for inferring demographic processes from online genealogies: Evidence from life-span dynamics, *Proceedings of the National Academy of Sciences* 119(10). <https://doi.org/10.1073/pnas.2120455119>
- Strathern, M. 1992. *After Nature: English Kinship in the Late Twentieth Century*. Cambridge, UK: Cambridge University Press.
- Thaning, Max and Martin Hällsten. 2020. The end of dominance? Evaluating measures of socio-economic background in stratification research, *European Sociological Review* 36(4): 533–547. <https://doi.org/10.1093/esr/jcaa009>
- Thomson, Elizabeth, Maria Winkler-Dworak, Martin Spielauer, and Alexia Prskawetz. 2012. Union instability as an engine of fertility? A microsimulation model for France, *Demography* 49(1): 175–195. <https://doi.org/10.1007/s13524-011-0085-5>
- Uhlenberg, Peter. 1996. Mortality decline in the twentieth century and supply of kin over the life course, *The Gerontologist* 36(5): 681–685. <https://doi.org/10.1093/geront/36.5.681>
- UNESCO. 2012. *International Standard Classification of Education: ISCED*. Montreal: UNESCO Institute for Statistics.
- Van der Laan, Jan, Edwin de Jonge, Marjolijn Das, Saskia Te Riele, and Tom Emery. 2023. A whole population network and its application for the social sciences, *European Sociological Review* 39(1): 145–160. <https://doi.org/10.1093/esr/jcac026>
- Van der Weide, Roy, Christoph Lakner, Daniel G. Mahler, Anbar Narayan, and Rakesh Ramasubbaiah. 2021. *Intergenerational Mobility Around the World, Policy Research Working Paper No. 9707*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/35827>
- Verdery, Ashton M. and Rachel Margolis. 2017. Projections of white and black older adults without living kin in the United States, 2015 to 2060, *Proceedings of the National Academy of Sciences* 114(42): 11109–11114. <https://doi.org/10.1073/pnas.1710341114>
- Verdery, Ashton M., Rachel Margolis, Zhangjun Zhou, Xiangnan Chai, and Jongjit Rittirong. 2019. Kinlessness around the world, *The Journals of Gerontology: Series B* 74(8): 1394–1405. <https://doi.org/10.1093/geronb/gby138>
- Wachter, Kenneth W. 1997. Kinship resources for the elderly, *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences* 352 (1363): 1811–1817. <https://doi.org/10.1098/rstb.1997.0166>
- Young, Michael D. and Peter Willmott. 1957. *Family and Kinship in East London*. Glencoe, IL: Free Press.
- Zagheni, Emilio. 2015. Microsimulation in demographic research, *International Encyclopedia of Social & Behavioral Sciences* 15(1): 343–346. <https://doi.org/10.1016/B978-0-08-097086-8.31018-2>