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Are ageing parents and adult children living farther apart? Decomposing trends in intergenerational distance and co-residence in Finland (2003-2017)

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Abstract

Closer distance between parents and their children facilitates intergenerational contact and exchanges of support in later life. There are mixed narratives and evidence regarding the divergence—or convergence—of intergenerational proximity in ageing societies. In this study, we examine the trends and structural drivers of intergenerational distance and co-residence in a rapidly ageing high-income society. We analyse register data from Finland, a country commonly characterised by weak family ties and a strong social welfare system. Using fine-scale geographic units and real-world navigation data to compute travel times, we examine the proximity of parents aged 60-69 to their children aged 18+ from 2003 to 2017, specifically analysing trends in distance and co-residence between fathers and sons, fathers and daughters, mothers and sons, and mothers and daughters. We then decompose the contribution of changing sociodemographic composition of the population on changes in these outcomes. We find that while co-residence is low (10% with sons and 5% with daughters in 2017), more than half of Finnish parents live within 30 minutes by car journey to their nearest, non-coresident child, with parents living 5 minutes farther away from their daughters than their sons. From 2003 to 2017, the average distance to the nearest, non-coresident child increased by 10% to 19% or 2-5 minutes, with father-daughter distance showing the greatest increase. While this suggests that ageing parents and adult children are living farther apart, we find that compositional changes—including educational expansion and increased divorce rates among parents, as well as the decline in co-residence with sons—underlie this geographic divergence.

Keywords: ageing, proximity, co-residence, OpenStreetMap, decomposition

Introduction

Increasing longevity potentially spells greater opportunity for parents and their adult children to spend more time together and exchange mutual support. While the notion of filial responsibility is less common in Western contexts, ageing parents can look to their adult children for old-age care and security, augmenting or complimenting formal care when facing health challenges (Bonsang, 2009; Reyes & Shang, 2024; Silverstein, 1995). Adult children can also still benefit from their parents' support after transitioning to adulthood, whether it be through later assistance in the care of grandchildren (Smits 2010) or returning to the parental home following job loss or divorce (Stone et al., 2014). Family ties can have important implications on the health and wellbeing of both generations (Jessee et al., 2025; Li et al., 2020; Rogerson et al., 1997; van der Pers et al., 2015).

Spatial proximity plays a critical role in structuring these intergenerational bonds, determining the level and frequency of contact and exchange (Bengtson & Roberts, 1991; Mulder & van der Meer, 2009; Schoeni et al., 2022). Scholars have gone so far as to suggest that spatial proximity is "fundamental, if not the decisive prerequisite for intergenerational solidarity" (Isengard, 2013, p. 237). Only a few studies, however, have examined the trends in geographic proximity of older parents and their adult children. Most of these studies show evidence for declining rates of co-residence and increasing intergenerational distances (Chudnovskaya & Kolk, 2017; Kalmijn, 2021; Kye & Choi, 2020; Ruggles, 2007; Steinbach et al., 2019), in line with ideas of how modernisation has led to widening spatial separation between parents and their children. Other scholars argue that while residential arrangements have changed over the years, family members still prefer living close to one another to maintain their ties (Mulder, 2018; Shelton & Grundy, 2000; Silverstein, 1995). Indeed, while intergenerational co-residence has

declined in high-income countries, most children still live within a reasonably close distance to their parents, even in settings perceived to have "weak" family ties such as the Netherlands and Sweden (Choi et al., 2020; Malmberg & Pettersson, 2007; Kolk, 2017; Syzdlik, 2017; see Shelton & Grundy, 2000). This suggests that intergenerational proximity and co-residence must be conceptualised and analysed as distinct spatial concepts in later life.

The changing residential arrangements (as illustrated above) may signal demographic and behavioural shifts occurring in populations, which altogether produces population-level trends (Cooke, 2011; Coulter, 2023; Foster, 2017; Kalemba et al., 2021). Parents are living longer lives, delaying childbearing, and experiencing increased rates of divorce, while adult children grew up during a time of educational expansion and increased urbanisation. Indeed, various studies find these structural changes to largely drive the increasing trends in intergenerational distance and declining rates of co-residence (Chudnovskaya & Kolk, 2017; Kalmijn, 2021; Kye & Choi, 2021). Within subpopulations, however, residential mobility rates may also change and contribute to changing intergenerational proximity. For instance, Chudnovskaya and Kolk (2017) find an increase in the distance of higher-educated and married children to their parents in Sweden, which can be explained by increased migration to metropolitan areas especially following the 2007-2008 global financial crisis.

In analysing intergenerational proximity, studies conventionally use self-reported measures of distance in surveys (Kalmijn, 2021; Shelton & Grundy, 2000; Steinbach et al., 2019), but this is subject to misreporting and loss of precision. Other studies, especially those that use register data, calculate geographical distance (e.g., geodesic or "as the crow flies," Great-Circle, Euclidean) between centroids of a geographic unit, such as census blocks or municipalities (Choi et al., 2020; Chudnovskaya & Kolk, 2017; Malmberg & Pettersson, 2007;

van der Pers et al., 2015). While this approach can give more accurate estimates than self-reports in surveys, the huge differences in land area, topography, and road infrastructure between urban and rural areas can bias the calculation of distance. Further, although co-residence and near co-residence, such as living in the same apartment or within a close range, are qualitatively different forms of living arrangements (Isengard & Szydlik, 2012; Compton & Pollak, 2015; Scelza, 2011; Silverstein, 1995), a number of these studies conflate co-residence with living in the same spatial unit such as municipality (e.g., Holmlund et al., 2013; Chudnovskaya & Kolk, 2017; Malmberg & Pettersson, 2007; Steinbach et al., 2019). As Compton and Pollak (2015) demonstrate using data from the United States (U.S.), treating co-residence as the limiting case of close distance can be misleading.

More importantly, there is a need to account for the gender dynamics between parents and their children. Most studies that examine geographic proximity only examine the gender of either the parent or the child, despite heterogeneity in the distances of fathers and mothers to their sons and daughters. For one, daughters are more likely to migrate and hence live farther from their parents (Chudnovskaya & Kolk, 2017; Malmberg & Pettersson, 2007). In later life, mothers in particular may move closer to and increase contact with their daughters amid deteriorating health (Artamanova et al., 2020), but this can be less apparent among fathers, who often still have their spouses alive to help provide care (Lin, 2008).

In this study, we analyse trends in geographic distance and co-residence between older parents and their adult children in Finland, a rapidly ageing Nordic country that is characterised by its strong social welfare system and its “weak” family ties (Reher, 2004). Utilising the rich geolocation and sociodemographic information from the Finnish population register, a key innovation of this study lies in the use of granular geographic units and real-world navigation

data, enabling a more precise measurement of the distance between parents and their children than done in any previous study. Second, we highlight the role of gender between parents and their children in structuring intergenerational relationships. While past related research has mostly examined the gender of parents and the gender of children disjointly, our study investigates the distance between fathers and sons, fathers and daughters, mothers and sons, and mothers and daughters. This approach allows for a more nuanced understanding of how intergenerational gender dynamics help shape intergenerational proximity, which in turn structures opportunities for exchange. Finally, our application of decomposition analysis significantly advances our understanding of the forces that shape secular trends in distance and co-residence. The analysis will help us determine how much compositional factors—including educational expansion, delayed childbearing, and increasing divorce rates—explain changes in distance to parents in a rapidly ageing high-income society like Finland.

The decline of intergenerational relationships?

Research on intergenerational proximity and ties is largely motivated by concerns about the impact of modernisation on family values and living arrangements in the western world (Hareven, 1994). According to the isolated nuclear family model, industrialisation gave rise to the conjugal family as the modal family structure—cutting the attachment of adult children to their older parents, who are increasingly living alone (Parsons, 1962). Such a functionalist view of the family has influenced proponents of the family decline hypothesis to paint a picture of the American family as one that is shrinking in size and whose primary function of providing care to family members has been eroding (Popenoe, 1993). A similar line of thinking is espoused by proponents of the *crowding out* hypothesis, an economic concept that has been extended to

family sociology to argue that the development of the welfare state has "crowded out" private transfers, including exchange of support between parents and their children (see Cox, 1987).

By the last quarter of the 20th century, however, evidence tempered, if not dispelled, concerns about the decline of the family as a social institution, and specifically the reciprocity of exchange between parents and their children. Hareven (1994) calls the ideal of extended households in the U.S. a myth—arguing that pre-industrial families in the U.S. and Europe were already predominantly nuclear, and that multigenerational households were less common and could not have been the norm in the past because of high mortality.

With the increasing availability of individual and household data, family sociologists have turned to a more contextual analysis of intergenerational relationships and found that families are more resilient than previously thought. Influencing much of subsequent research on the subject is the principle of linked lives, which posits that the lives of family members are interdependent and "synchronised" in response to role expectations and external stressors, such as economic challenges (Elder, 1998; Elder, 2003). A related concept is intergenerational solidarity, a multifaceted construct relating to intergenerational cohesion between adult children and their ageing parents (Bengtson & Roberts, 1991). Geographic proximity plays an important role in this cohesion. Being a key aspect of "structural solidarity," it shapes or constrains opportunities for intergenerational exchanges (Bengtson & Roberts, 1991).

Empirical studies that have been informed by these two frameworks have found that contrary to earlier expectations, intergenerational relationships have remained stable—if not strengthened, in the last few decades. In the U.S., Patterson & Reyes (2021) find an increasing share of adults between 1973 and 2018 who support the idea of co-residing with older adults, and this sentiment is increasing among the younger age groups. Additionally, Kalmijn and De Vries

(2009) report stability in the frequency of intergenerational contact in Austria, West Germany, and Italy, and even note an increase in the U.S. and Great Britain. Despite strong regional disparities in family and welfare systems in Europe, Kalmijn and Saraceno (2008) find no systematic differences across countries in the share of parents receiving support from children.

Drivers of proximity and co-residence

Age

The developmental model of later-life migration by Litwak & Longino (1987) posits that the increasing care needs of ageing parents induce moves either toward adult children—thereby resulting in co-residence or enhanced proximity—or into institutions such as nursing homes, which may result in parents living farther away from their children. Indeed, later-life migration decreases with age but may increase in the advanced ages (Bernard et al., 2014). How this affects parents' distance to their children is not clear. One study finds that being in the advanced ages (e.g., 80+) is associated with closer proximity to children (Lin & Rogerson, 1995), although another study finds no association between parental age and geographic convergence with adult children (Rogerson et al., 1997). There may also be considerable heterogeneity with respect to children's age and gender. In Sweden, for instance, sons live closer to parents in the younger years, while daughters live closer to parents in later years (Malmberg & Pettersson, 2007).

Education

Studies largely attribute the increase in intergenerational distances and the decline in co-residence to educational expansion, specifically the migration of children to study in universities and work in cities (Compton & Pollak, 2015; Choi et al., 2020; Chudnovskaya & Kolk, 2017; Kalmijn, 2021). At the same time, the propensity to live farther away from parents and to move to metropolitan areas increases within education groups over time, as noted in Sweden

(Chudnovskaya & Kolk, 2017). Most studies, however, only account for children's education. As Grundy and Shelton (2001) hypothesise, the influence of education on intergenerational contact will attenuate over time as education expands and the education gap between generations closes. In contrast, Malmberg and Pettersson (2007) find that the education of parents is associated with greater distances to children, likely due to their and their children's high migration rates. Additionally, there may be gender differences in how education has shaped spatial proximity. The educational expansion seen in the second half of the 20th century was initially marked by greater rates of tertiary education enrolment among men, but as women's education expanded more rapidly, the gender gap was closed and reversed since the 1990s (Schofer & Mayer, 2005). It can be hypothesised then that the contribution of educational expansion to changing spatial proximity, if any, would be greater for mothers.

Marital status

Past research has shown that married parents live farther away from their children as opposed to parents who are widowed, which could be due to the greater care needs of the latter, especially of mothers during their bereavement (Compton & Pollak, 2015; Lin & Rogerson, 1995; Malmberg & Pettersson, 2007; Rogerson et al., 1997; van der Pers et al., 2015). Meanwhile, studies report that unmarried children tend to live closer to their parents (Choi et al., 2020; Shelton & Grundy, 2000). The effect of divorce, meanwhile, may depend on parents' gender. Divorce is more detrimental for father-children ties (Lin, 2008), and divorced fathers are more likely to experience a decline in co-residence with, and an increase in distance to, their adult children, while an opposite pattern is observed among divorced mothers (Shapiro, 2003). The role of children's divorce is less explored in the literature, but one study finds that children may move to

their parental homes—albeit temporarily—following divorce, especially among children who already live close to their parents (Albertini et al., 2018; Das et al., 2017).

Place characteristics

The migration of children to cities and other urban areas typically increases their distance to their parents, who are left behind in rural areas (Lee et al., 1990; Litwak & Longino, 1987). For city families, however, housing market conditions may induce the movement of children back to their parental homes (Lee et al., 1990). Related to this, analyses of proximity and co-residence need to account for geographic and regional differences in living arrangements, housing markets, and economic opportunities (Elman & Uhlenberg, 1995). In the United Kingdom, for example, living in the south is associated with greater distance to parents, indicating both north-south migration of children and longer travel times in the Greater London area (Shelton & Grundy, 2000). Finally, studies suggest that housing insecurity among children is associated with moves to home-owning parents (Rogerson et al., 1997; Shelton & Grundy, 2000).

Gender dynamics

Sociological and anthropological research emphasises the "special" bond between mothers and daughters (e.g., van der Pas et al., 2007; Scelza, 2011). Several studies, however, find a greater rate of maternal co-residence and closer proximity among sons than daughters, primarily due to the higher migration rates of women (Chudnovskaya & Kolk, 2017; Malmberg & Pettersson, 2007; Holmlund et al., 2013; Shelton & Grundy, 2000). Studying couples in Sweden, Chudnovskaya & Kolk (2017) explicitly examine the distances of daughters and sons to their mothers and fathers, finding that sons live closer to mothers than fathers. They also find that the distance of daughters to their parents increased more than that of sons between 1980 and 2010, consistent with a subsequent study by Kalmijn (2021).

The Finnish context

We study Finland, a vanguard country in terms of ageing. In 2023, 30% of Finns were aged 60+, and this is projected to rise to 39% by 2070 (Statistics Finland, 2024). The Finnish Constitution stipulates every citizen's right to subsistence and care, including social and healthcare services, which were decentralised at the municipal level until the introduction of "well-being services counties" in 2023 (Finnish Institute for Health and Welfare, 2023; Karjalainen & Mäki-Petäjä-Leinonen, 2020). The range of these services includes home care, the preferred long-term care arrangement of most older Finns (Alastalo et al., 2017). Such a welfare system signals that support from family members is voluntary (Karjalainen & Mäki-Petäjä-Leinonen, 2020). Nonetheless, this does not mean that adult children are absent in the lives of their ageing parents. On the contrary, Finland, together with Sweden, has the highest share of adults engaged in informal caregiving for older adults (44%), although it also has among the lowest share of intense informal caregivers (4.9%), defined as spending 11 hours or more per week for caregiving (Verbakel, 2018). Additionally, Jolanki and colleagues (2013) find that family members, specifically working women, stepped up to provide support to their ageing parents in response to tightening social spending at the turn of the 21st century. Blomgren et al. (2012) also suggest that adult children in Finland act as a "bridge" between their parents and formal services.

Finland thus provides an excellent opportunity to revisit notions and assumptions about the impact of modernisation on family ties in high-income and especially strong welfare contexts. Martikainen et al. (2019) find that the share of older adults in living arrangements such as multigenerational households have declined and will continue to decline in the next few years. Moreover, there is a strong geographic clustering of in- and out-migration in Finland. A recent study finds that in-migration rates are highest in the country's southern municipalities, especially

its major cities, including Helsinki, Turku, and Tampere, while municipalities in the northwestern regions are losing people (Jokela et al., 2025).

Data and methods

Data

We use data from the Finnish population register, which provides high-quality, pseudonymised sociodemographic information of all individuals residing in Finland, allowing the linking of parents to their children. The register is maintained by Statistics Finland, and the license to use these data sets is approved by the Statistics Finland Board of Ethics (permit TK-53-1490-18). We use a random sample of 5% of Finnish parents, and we define their adult children to include biological and adopted children aged 18+, the legal age of adulthood in Finland. Given the under-coverage of parent-child linkage in the pre-1938 cohorts (see Einiö et al., 2015), we delimit the observations to parents born from 1938 onwards. We also constrain the sample to parents aged 60-69 to minimise the confounding effect of the ageing of older birth cohorts (see Bell & Jones, 2013). Our observation period thus covers the years 2003 to 2017, and the analysis sample consists of 390,847 observations from 57,085 parents.

Variables

Spatial proximity

We are interested in two sets of outcomes, namely, a) the distances of fathers and mothers to the nearest son and the nearest daughter, and b) the co-residence of mothers and fathers with any son and any daughter. Co-residence is based on whether the parent and any of their children shared the same household id. Meanwhile, we measure distance using the location of households, available at the level of five-digit postal codes (N = 3,100). Postal codes in Finland have a

median area of 52 km^2—providing much higher spatial resolution than other internationally comparable administrative units (Weckroth et al., 2022). It is even finer in major cities like Helsinki, where the median postcode area is 2.1 km^2. As a proxy of individual locations, we identify the geo-referenced centroids of postal codes using the *geofi* package in R (Kainu et al., 2024). To compute the distances, we calculate the shortest travel time by car (in minutes) between postal code centroids. Taking the car travel distance is a reasonable approach, especially with the high rate of car ownership in Finland (Eurostat, 2024). To calculate the optimal route between each pair of centroids, we use the *osrmtime* command in Stata (Huber & Rust, 2016), an interface between Stata and the Open-Source Routing Machine (OSRM), which uses freely licensed, community-contributed navigation data from OpenStreetMap (OSM). This state-of-the-art approach helps provide more precise distance estimates because it is based on road networks (see Arsanjani et al., 2015; Huber & Rust, 2016). For inter-island journeys (e.g., to, from, and within Åland islands), OSRM calculates distance by including the optimal ferry route in the car journey, whenever possible (see https://project-osrm.org/docs/v5.24.0/api/#).

Explanatory variables

In analysing the factors associated with the trends in intergenerational distances and co-residence, we examine the characteristics of the parents that may be correlated with living arrangements, including their age (in single years), education (college-educated vs otherwise), homeownership (renting vs otherwise), place of residence (urban vs rural), and marital status (never married, married or in registered partnership, divorced, and widowed). We also control for parents' province of residence. Provinces in Finland were abolished as an administrative unit in 2009 in favour of smaller subdivisions such as regions and municipalities, but we use them nonetheless as they still reflect geographic division for a great part of our study period. These

provinces include Lapland and Oulu in the north, Eastern Finland, Western Finland, the island region of Åland, and Southern Finland. We further separate the Greater Helsinki area, consisting of the cities of Helsinki, Espoo, and Vantaa, and the town of Kauniainen, given the metropolitan area's exceptionally high in-migration rates (Jokela et al., 2025). Finally, because we analyse from the parent's perspective, we control for the collective characteristics of the adult children, including the number of children, their median age, whether anyone is college-educated, whether anyone is divorced, and whether anyone has experienced job loss in the past year.

Methods

We first describe annual trends in intergenerational distance and co-residence from 2003 to 2017. We present median distances instead of the means because of the skewed nature of this outcome. We then perform Oaxaca-Blinder decomposition to disentangle the effects of changing population composition on the change in intergenerational distance and co-residence between the earliest and latest five-year periods 2003-2007 and 2013-2017. Oaxaca-Blinder decomposition has been recently applied in migration and spatial mobility research to shed light, for instance, on the role of ageing and educational expansion on declining residential mobility in different contexts (Coulter, 2023; Foster, 2017; Kalemba et al., 2020; Hu & Chou, 2016). Chudnovskaya and Kolk (2017) applied a version of the method, called two-fold decomposition, to study the contribution of educational expansion on intergenerational distance in Sweden. We develop this approach by performing what is known as the three-fold Oaxaca-Blinder decomposition. The analysis entails two steps. First, given comparison periods 2003-2007 (P_1) and 2013-2017 (P_2), we generate linear models of intergenerational distance/co-residence, which take the form:

$$Y_t = X_t'\beta_t + \epsilon_t; \text{ where } E(\epsilon_t) = 0 \text{ and } t \in \{P_1 \text{ and } P_2\},$$

Y_t is the outcome, X_t is the vector of covariates, β_t is the vector of regression coefficients, and ϵ_t is the error term for each time period. We model distances using ordinary least squares (OLS) regression, while we generate linear probability models of co-residence. Second, following Jann (2008), the mean change in distance and rates of co-residence between periods P_1 and P_2 can be expressed and decomposed as:

$$\bar{Y}_{P_2} - \bar{Y}_{P_1} = \left[(\bar{X}_{P_2} - \bar{X}_{P_1})\hat{\beta}_{P_1}\right] + \left[(\hat{\beta}_{P_2} - \hat{\beta}_{P_1})\bar{X}_{P_1}\right] + \left[(\bar{X}_{P_2} - \bar{X}_{P_1})(\hat{\beta}_{P_2} - \hat{\beta}_{P_1})\right].$$

The first additive component on the right-hand side of the equation, referred herein as composition effect, estimates the effect of changes in population composition (e.g., educational expansion, changing marital status, changing homeownership rates), based on parameter estimates at P_1. The second additive component, which we refer to as the coefficient effect, is the amount of change in proximity/co-residence due to period-to-period change in regression coefficients based on P_1 characteristics. That is, it captures the shifting influences of the explanatory variables on proximity/co-residence over time. The third additive component measures the interaction or the simultaneous effects of composition and coefficient effects.

We also present detailed decomposition of the individual contribution of each predictor to the change in distance and co-residence. These results, however, can vary with the choice of the base category for categorical variables, which alters the coefficient effects—a problem known as the Blinder-Oaxaca identification problem (Jann, 2008). To overcome this problem, we "normalise" the regression coefficients for each predictor such that they express deviation from the grand mean, a procedure equivalent to averaging the decomposition results from using each categorical level of a variable as the base category (Coulter, 2023; Yun, 2005). We perform this and the rest of the decomposition analysis using Jann's (2008) *oaxaca* command in Stata (version 17).

Results

Changing composition

We first describe changes in the composition of older parents and their adult children between the periods 2003-2007 and 2013-2017 (Table 1). In 2003-2007, a third of the parents in the sample were aged 65-69, and this increased to more than half of the sample by 2013-2017. The younger age profile of the 2003-2007 sample is due to the fact that cohorts born before 1938 (aged > 65 in 2003) were excluded from the sample. In terms of their education profile, the share of the college-educated increased by 3 percentage points (PP) among fathers and by 8 PP among mothers over the two periods. Meanwhile, we observe an increase in the share of fathers and mothers who were either unmarried or divorced. The percentage of fathers who were married or in registered partnership was as high as 79% in 2003-2007, but this declined to 72% by 2013-2017. A lower share of mothers (65%) were married in 2003-2007, and this slightly declined to 62% in 2013-2017. In contrast, there was around a 4 PP increase in the share of fathers and mothers who were divorced.

In terms of place characteristics, there was a percentage point increase in the share of fathers and mothers who were renting and were living in rural areas. There was not a major change in terms of the province of residence, with close to four in 10 parents living in Southern Finland and Greater Helsinki. Among fathers, the share of those living in Oulu, Eastern Finland, and Western Finland each increased by close to a percentage point, which was compensated by close to a combined 4 PP decline in the share of fathers living in Southern Finland and Greater Helsinki. We see a smaller decline (1 PP) in the share of mothers residing in Greater Helsinki.

Parents had an average of two adult children, and this barely changed over the two periods. Meanwhile, the average age of children very slightly increased by 0.3 years.

Additionally, the percentage of parents who had any college-educated children increased by 4 PP. We do not find an increase in the share of parents whose children experienced divorce, but the share of those whose children experienced job loss in the past year slightly increased by around a percentage point.

Trends in intergenerational proximity

Figure 1 shows a considerable decline in the share of parents co-residing with sons (Figure 1). For instance, 15% of fathers and 14% of mothers were co-residing with a son in 2003, and these figures declined to 11% of fathers and 10% of mothers in 2017. The prevalence of co-residence with a daughter was much lower than with sons, and it only gradually decreased over the study period. In any given year, co-residence with a son was more common than living with a daughter, and compared to the patterns observed in distance, there was not as strong heterogeneity in co-residence by the parent's gender.

The decline in co-residence influences trends in median shortest travel time. Figure 1 shows the 15-year trends in the median distance (in minutes) of fathers and mothers to their nearest adult sons and daughters if we (a) included and (b) excluded co-resident children. First, under both definitions, there is a notable heterogeneity in intergenerational distances across genders. At every time point, mothers and sons lived closest to one another, while fathers and daughters lived the farthest from each other. Overall, parents lived closer to their sons than their daughters, with distance to daughters being around 5 minutes longer than sons over the years.

If the co-resident children are included and assigned a distance of 0, the trends suggest considerably increasing distances over time. The trend is particularly true for the distance between mothers and sons and between fathers and daughters—both increasing by about 4 minutes between 2003 and 2017. Although this increase appears modest in magnitude, it

represents close to a 28% increase in mothers' travel time distance to their nearest son, and a 21% increase in fathers' travel time distance to their nearest daughter.

When co-resident children are counted out, the distance to the nearest children shifts up, and the trends are more modest than they have previously appeared. Specifically, the distance between mothers and their nearest son only increased by 3 minutes or 18% between 2003 and 2017. It is also worth noting that, compared to the previous trend, the distance between fathers and sons shifts up and almost approximates mother-daughter distance, which was relatively stable over time. For both these pairs, distance increased by only 2 minutes, equivalent to a 10% increase for mothers and daughters and a 12% increase for fathers and sons. An exception to these moderate trends is the distance between fathers and non-coresident daughters, which increased by 19% or 5 minutes between 2003 and 2017.

Figure 3 illustrates how close Finnish parents are to their nearest, non-coresident children. Between 2003 and 2017, more than half of parents lived within 30 minutes of travel time to their nearest, non-coresident child. In fact, more than a quarter of parents and their nearest child lived within 10 minutes of car journey to each other. Mothers particularly lived in close proximity to their sons, with nearly a third of mothers living within less than half an hour of driving distance to their nearest son. Living more than two hours away from children was rare, accounting for less than a quarter of parents. Overall, the distance between parents and their children was very gradually increasing.

Factors associated with proximity and co-residence

Tables 2a and 2b present the linear models for distance and co-residence, respectively, for the period 2003-2007. These tables serve to orient the readers in the results of the decomposition that follows.

Distance. Table 2a shows that the association between age and distance to the nearest child is small and insignificant, while parental education is positively associated with distance. With respect tomarital status, being unmarried is positively associated with close to a 25-minute increase in fathers and mothers' distance to their nearest daughters. Likewise, parental divorce is associated with a 25-minute increase in fathers' distance to their nearest daughters, with no association found between mothers and daughters. Meanwhile, renting is associated with fathers living farther from their children, but this does not hold for mothers. We also observe strong heterogeneity across geography. Rural residence is associated with greater distance to children, regardless of gender, while parents in Greater Helsinki are living closer to their children than in the rest of the country. With respect to living in Greater Helsinki, residing in Lapland is associated with between 2 to 4 hours of car journey to children.

In terms of children's characteristics, the number of children is associated with closer proximity to the nearest child. Parents with younger children are more likely to reside closer to a child, with the exception of fathers and their nearest daughter, with whom the association is insignificant. Having a college-educated child is associated with greater intergenerational distance, and the association is particularly strong among mothers. Moreover, children's experience of divorce is associated with greater distance to sons, but it is associated with closer proximity between mothers and daughters. We do not find a significant association between intergenerational distance and children's unemployment, except that having any unemployed child is associated with mothers living closer to their nearest daughter.

Co-residence. Parental age is positively associated with the probability of intergenerational co-residence (Table 2b). Being college-educated is negatively associated with co-residence, particularly with sons. With the exception of mother-daughter pairs, divorced parents—and

especially divorced fathers—are less likely to co-reside with their adult children. Additionally, widowed mothers (but not fathers) are more likely to live with a child. In terms of place characteristics, renting is associated with lower likelihood of co-residence, while parents in rural areas are more likely to co-reside with a child, especially with sons. Unlike with distance, we do not observe strong heterogeneity in co-residence across provinces. This is with the exception of parents in Greater Helsinki, who are more likely to live with their daughters.

Having more children is also associated with higher likelihood of co-residence. The median age of children and having a college-educated child are both associated with lower probability of intergenerational co-residence. We do not observe a significant relationship between co-residence and children's experience of divorce and unemployment, except that having a divorced child lowers the probability of mothers and sons co-residing.

Coefficients of the linear models for the period 2013-2017 are presented in supplement. There are small differences in the coefficients, but the overall patterns discussed hold.

Decomposition analysis

Figures 4a and 4b respectively show the overall results of decomposing the change in intergenerational distance and co-residence between the periods 2003-2007 and 2013-2017. In Figure 4a, a positive (negative) effect implies that the component contributes to increased (decreased) distance over time, while in Figure 4b, a positive (negative) effect implies that the component contributes to increased (decreased) probability of co-residence.

Changes in distance. Across all genders, changes in the composition of parents and their children explains most of the increase in intergenerational distance, specifically contributing to about a 5 to 6-minute increase in parents' travel time to the nearest child (Figure 4a). For fathers, the

contributions of coefficient and interaction effects are small and insignificant, while for mothers, coefficient effects narrow their distance to sons and daughters by around 2.5 minutes.

We focus on the specific drivers of these compositional effects in Table 3. As in Figure 4a, positive values reflect increasing travel time (in minutes). The accumulation of small but significant contributions from various demographic changes explain the increase in the distance between parents and their children. For instance, educational expansion in both generations, especially among mothers and daughters, contributes to increased distances. In terms of changes in marital status, the increasing share of divorced parents, especially fathers, is also a positive driver of increased distance, although it is associated with decreased distance for mothers. Consistent with our findings that widowhood increases proximity (Table 2) and that the share of widowed mothers declined over the period (Table 1), Table 3 indicates that changes in widowhood contributed to an increase of 0.3 minutes in mother's distance over the period.

In terms of changes in place characteristics, the almost 2 PP increase in the share of fathers who reside in rural areas contributes a very modest but significant 0.4 and 0.2-minute increase in the distance to their nearest son and daughter, respectively. Changes in parents' geographic distribution is also associated with changes in the distance of fathers to their children. Specifically, the small increase in the share of fathers residing in northern parts of Finland—and consequently the decreased share of fathers in Southern Finland and Greater Helsinki—contributes to increased distance to sons. The decimal increase in fathers' average number of children explains close to half a minute decrease in their distance to sons. Conversely, the small decline in the average number of children among mothers is associated with increased distance. Overall, what may have seemed like inappreciable increases in children's median age is, in fact, associated with decreased distance to children, especially among mothers.

Changes in co-residence. In contrast to distance, coefficient effects—and not compositional ones—mostly explain the decline in the co-residence of parents with their children, especially sons, between 2003-2007 and 2013-2017. Figure 4b illustrates that coefficient effects respectively account for 3.5 PP and 2.5 PP decline in fathers' and mothers' co-residence with sons. Table 4 breaks down the specific contributions of changes in regression coefficients. First, as we have found earlier, parental age is positively associated with co-residence in the period 2003-2007. Thus, the negative coefficient effect of parental age on mothers' co-residence with sons suggests that this association weakened enough to produce a 24 PP decline in co-residence. This, however, is counterbalanced by the upward contribution from children's median age, indicating a weakening of the negative association between co-residence and children's age. Aside from age, results also suggest that the weakening of the positive relationship between the number of children and co-residence is associated with decreased co-residence of parents with their sons, but we do not observe the same with respect to daughters.

Other changes in coefficients have minute contributions but are nonetheless worth noting. For instance, the decreased propensity of lower-educated mothers to live with their sons is associated with 0.8 PP decrease in co-residence, while a 0.6 PP decline in co-residence between fathers and sons can be attributed to the decreased propensity for co-residence with lower-educated sons. In terms of marital status, there has been an increased tendency for intergenerational co-residence among divorced parents, but we find an opposite inclination for widowed parents. Additionally, the decreasing propensity for co-residence with children among home-owning fathers is associated with a 1.2 PP decline in the prevalence of co-residence with daughters.

For reasons of space, we provide as supplementary material the detailed decomposition of coefficient and interaction effects for the change in distance, and the detailed decomposition of the compositional and interaction effects for the change in co-residence, given that their contributions are secondary, if not insubstantial (Figures 4a and 4b).

Supplementary analyses

We perform additional analyses to check the robustness of our results. First, we examine distance to sons and daughters among married parents in order to examine whether parental re-marriage affects our results. In Finland, re-marriage is quite common, especially among men (Statistics Finland, 2020), which potentially increases re-married parents' pool of children. We find that the distance to children between married mothers and married fathers differs only by 1-2 minutes, indicating the minor role that re-marriage plays in shaping intergenerational proximity.

Second, to check whether the long travel time between islands skews the results, we replicate our analysis of intergenerational proximity using a sample that excludes parents and children in Åland islands. We find that their exclusion virtually does not change the results. Third, contrary to expectations (Compton & Pollak, 2015; Lin & Rogerson, 1995; Malmberg & Pettersson, 2007), we find that as adult children grow older, parents live closer to them. An additional sensitivity check suggests that the known positive relationship between children's age and distance to parents is due to the fact that previous studies have included co-resident children in the computation of distance. If co-resident children are excluded, there exists, in fact, a negative relationship between children's age and intergenerational distance.

Finally, we also replicate our analysis using the same OSM-based travel distance but using kilometres as our unit of measurement. Using travel distance yields highly comparable results as when travel time is used. We provide all of these results as supplementary materials.

Summary and discussion

This study is motivated by two questions: is there evidence of geographic divergence between older parents and their adult children in recent years in rapidly ageing high-income societies, and how much do the changing population composition and the changing behaviours of parents and their children explain changes in the distance between them over time? To the best of our knowledge, this is the first study to use high spatial resolution data and realistic travel-time data in calculating the distance between parents and their children. Second, the study demonstrates the importance of including in the analysis both the gender of the parents and also that of their adult children. For instance, we find that parents live closer to their sons than their daughters, while the distance between mothers and daughters have been relatively stable compared to other pairs. Finally, decomposition analysis offers the opportunity to examine how much of the changes in intergenerational distance and co-residence are due to parents and children's changing demographics and to their increasing tendency to live farther apart.

Overall, we find a near universal increase in intergenerational distance and a near universal decline in co-residence between 2003 and 2017. We see the greatest increase in the distance between fathers and their nearest daughter, and between mothers and their nearest son, respectively increasing by 21% or 4.6 minutes and 28% or 3.9 minutes in the 15-year period. These increasing trends can be attributed, in part, to the decline in co-residence especially with sons in the early 2000s. Specifically, when co-resident sons are excluded, mothers' average distance to their nearest son only increased by 18% or 3.2 minutes between 2003 and 2007. Hence, while intergenerational co-residence is relatively low in Finland, it is substantial enough to skew the calculation of distances.

Consistent with past research (Choi et al, 2020; Malmberg & Pettersson, 2007; Kolk, 2017; Syzdlik, 2016; Shelton & Grundy, 2000), we find that a half of Finnish parents live within half an hour of travel to their nearest, non-coresident children. As our results suggest, geography plays an important role in shaping intergenerational proximity: parents in cities live closer to their children, while parents and children in northern parts of Finland are geographically dispersed. In contrast, parents in rural areas are more likely to co-reside with a child, while province of residence only influences co-residence with daughters. Other findings are in line with expectations. For one, parents and children's higher education is associated with greater distance and lower probability of co-residence, while residing in rural areas is associated with both increased distance and higher probability of co-residence. Additionally, we find that home-owning parents live closer to and are more likely to co-reside with their children. We also find that the number of children is associated with closer proximity to the nearest child and higher probability of co-residence. However, several findings are nuanced by gender. For instance, parental divorce is associated with greater distances and lower likelihood of co-residence only among fathers, in line with the literature (Lin, 2008; Shapiro, 2003). In contrast, parental divorce does not influence mother-daughter distance and co-residence, which instead are associated with children's experience of divorce and job loss.

How, then, have these factors shaped the geographic divergence between parents and their children? First, our decomposition analyses suggests that various structural changes largely explain the increase in distance between parents and children from 2003-2007 to 2013-2017. Among these changes is educational expansion, which we show to be associated with increased distances, supporting previous research (Chudnovskaya & Kolk, 2017; Kalmijn, 2021). The effect of educational expansion is stronger for mothers, whose cohort experienced greater gains

in educational expansion than fathers. For instance, the 3 PP increase in the share of college-educated fathers explains only 0.3 minutes of the increase in distance to the nearest son and daughter (around 5-7% of the compositional effects). In contrast, the 8 PP increase in the share of college-educated mothers accounts for 0.6 minutes of the increase in distance to their nearest son (15% of compositional effects), and 0.7 minutes for that of the mother-daughter pair (38% of compositional effects).

The growing rate of parental divorce also spells increasing distance to children in general. However, although fathers and mothers have experienced a similar extent of increase in divorce rates, the impact of this increase on distance trends is greater among men. In fact, increased divorce rates are associated with closer proximity between mothers and their daughters, consistent with past research (Shapiro, 2003). Meanwhile, across geography, the growing share of parents in rural and northern parts of the country also contribute to an increased distance to their children, which could be potentially explained by retirement-related moves to rural areas in Finland (Nivalainen, 2004).

We also show that the change in distance is sensitive to small changes in the average number and median age of children. Because having more children is associated with closer intergenerational proximity, the small increase in fathers' average number of children contributes half a minute decrease in their distance to children, while the decimal decline in mothers' average number of children is associated with about a minute increase in their distance to children. Meanwhile, we find that children's median age is associated with enhanced intergenerational proximity. This implies that childbearing postponement can result in increased intergenerational distances in later life. In this study, however, we observe a 0.3-year increase in

the median age of children over the two periods, which contributes a very small increase in intergenerational proximity.

As opposed to distance, we find that the decline in co-residence, especially with sons, is largely due to the changing influence of parents' and children's characteristics on co-residence—further emphasising the different mechanisms underlying patterns and trends in proximity and co-residence. Two major factors particularly explain the decline in co-residence. First, parents in older ages have been less likely than before to co-reside with their children. Second, we observe a decreased association between the number of children and co-residence, which reflects an overall decline in the probability of children to co-reside with their parents. These changes are substantial enough to drive down co-residence rates despite the increased likelihood of divorced parents to co-reside with a child.

We recognise several limitations of this study. First, our application of OSM data assumes that the road networks and traffic did not change over the study period. Unfortunately, we have no way to assess this assumption because OSRM is not based on real-time traffic conditions (Huber & Rust, 2016). Second, computed distances are more imprecise in large postcodes, which are typically found in the north of Finland, but we have sought to reduce this bias by accounting for geographic division in our analysis. Third, to perform proper period analyses, we have delimited the sample of parents to those aged 60-69, but the relationship between age and proximity and co-residence might be different in the older ages, where health-related proximity-enhancing moves are increasing (Litwak & Longino, 1987). Fourth, we have analysed from the parents' perspective and viewed their children collectively, but some associations presented here may not directly apply when looking from the children's perspective. For instance, from the parents' point of view, the number of children is associated with closer

proximity to and higher probability of co-residence with children; from the child's perspective, however, the number of siblings may be associated with lower likelihood of co-residence with the parent (van den Broek & Dykstra, 2017; Malmberg & Pettersson, 2007). Finally, given the data and study design, we cannot make specific claims about the behavioural and cultural changes underlying parents and children's distance, such as growing individualisation, which may also be important drivers of intergenerational proximity (Kalmijn, 2021).

Coming back to our main research question, there is some evidence for modest geographic divergence between ageing Finnish parents and their adult children, which follows the secular trends observed in Finland and other countries (Chudnovskaya & Kolk, 2017; Kye & Choi, 2021; Martikainen et al., 2019; Ruggles, 2007; Schoeni, 1998). Nonetheless, most Finnish parents still live reasonably close to their adult children, as also observed in other high-income countries. In line with the modernisation hypothesis, we find that structural changes—including educational expansion and growing divorce rates—as well as the substantial decline in co-residence with sons, underlie the increase in intergenerational distances. Amid such changes and the challenges posed by population ageing, how parents and their children navigate the opportunity presented by their spatial proximity is a rich subject for future investigation.

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Table 1. Characteristics of Finnish fathers and mothers and their adult children: 2003-2007 and 2013-2017

	Fathers		Mothers	
	2003-2007	**2013-2017**	**2003-2007**	**2013-2017**
	% or mean ± SD	**% or mean ± SD**	**% or mean ± SD**	**% or mean ± SD**
Parent characteristics				
Age				
60-64	66.6	49.3	65.4	49.1
65-69	33.4	50.7	34.6	50.9
College-educated	27.9	31.0	21.1	29.5
Marital status				
Unmarried	1.0	4.2	1.9	4.2
Married/registered partnership	79.2	72.4	64.9	62.2
Divorced	16.4	20.4	19.6	23.3
Widowed	3.5	3.0	13.6	10.4
Renting	15.5	16.6	18.4	19.9
Rural residence	36.5	38.1	35.1	34.5
Province of residence				
Lapland	3.7	3.8	3.6	3.8
Oulu	8.1	9.2	8.1	8.2
Eastern Finland	11.4	12.0	12.0	11.9
Western Finland	36.2	37.0	36.3	36.2
Southern Finland	25.7	24.5	24.5	25.4
Åland Islands	0.6	0.6	0.4	0.5
Greater Helsinki	14.4	12.9	15.2	14.1
Children's characteristics				
No. of children	2.1 ± 1.0	2.2 ± 1.1	2.2 ± 1.1	2.1 ± 1.1
Median age	34.6 ± 5.3	34.9 ± 5.8	37.0 ± 5.2	37.3 ± 5.8
Any college-educated	23.8	28.1	24.0	27.9
Shock: anyone experienced divorced	13.3	13.3	16.5	16.0
Shock: anyone unemployed	8.7	10.1	8.6	9.3
Number of observations	41,694	66,365	41,694	66,365

Note: authors' calculation using Finnish register data. Observations are pooled across each five-year period, and hence the values do not reflect actual percent distributions of parents.
SD = standard deviation

Table 2a. Ordinary least squares regression model of distance (in minutes) to the nearest, non-coresident child, by gender of the parent and child: period 2003-2007

	Father's distance to nearest		Mother's distance to nearest	
	son	**daughter**	**son**	**daughter**
Age	-0.3	-0.2	0.5	0.6
	(0.4)	(0.4)	(0.3)	(0.3)
College-educated	18.7***	16.6***	15.4***	13.6***
	(1.8)	(2.0)	(1.8)	(1.9)
Marital status				
Married/registered partnership	Ref	Ref	Ref	Ref
Unmarried	-5.3	25.9**	6.9	24.6***
	(10.3)	(9.3)	(6.2)	(6.2)
Divorced	15.0***	24.9***	12.7***	1.1
	(2.1)	(2.3)	(1.8)	(1.9)
Widowed	4.8	5.9	-1.7	-0.3
	(4.1)	(4.4)	(2.1)	(2.1)
Renting	5.5*	7.6**	1.2	-1.1
	(2.2)	(2.3)	(1.9)	(1.9)
Rural	28.6***	28.2***	18.1***	31.7***
	(1.7)	(1.8)	(1.5)	(1.6)
Province of residence				
Greater Helsinki	Ref	Ref	Ref	Ref
Lapland	194.3***	227.1***	165.5***	185.5***
	(4.5)	(4.8)	(3.9)	(4.1)
Oulu	85.4***	112.7***	81.7***	85.1***
	(3.4)	(3.7)	(3.1)	(3.2)
Eastern Finland	81.0***	78.5***	86.0***	81.0***
	(3.1)	(3.4)	(2.8)	(2.8)
Western Finland	33.1***	35.9***	35.7***	32.3***
	(2.4)	(2.7)	(2.2)	(2.3)
Southern Finland	22.9***	23.3***	24.6***	22.3***
	(2.5)	(2.8)	(2.3)	(2.4)
Åland Islands	48.0***	51.0***	75.6***	39.3***
	(10.5)	(12.0)	(11.5)	(11.0)
Number of children	-11.3***	-10.1***	-10.9***	-9.9***
	(0.7)	(0.8)	(0.6)	(0.6)
Median age of children	-0.8***	-0.2	-1.2***	-0.5**
	(0.2)	(0.2)	(0.2)	(0.2)
Any child college-educated	22.9***	24.3***	32.5***	29.6***
	(1.8)	(2.0)	(1.7)	(1.7)
Any child divorced	6.5**	-0.2	7.6***	-5.6**
	(2.2)	(2.4)	(1.9)	(1.9)
Any child lost job at t-1	2.1	-3.1	1	-5.5*
	(2.7)	(2.7)	(2.4)	(2.3)
Constant	74.4***	50.0*	38.6*	16
	(21.3)	(23.2)	(19.4)	(19.8)
Observations	21,345	20,820	24,258	24,354
Adjusted R^2	0.15	0.17	0.14	0.16

Note: observations pooled across the period 2003-2007
Ref = reference category
Standard errors in parentheses
+ p<.10, * p<.05, ** p<.01, *** p<.001

Table 2b. Linear probability model of co-residence with a child, by gender of the parent and child: period 2003-2007

	Father		Mother	
	Son	**Daughter**	**Son**	**Daughter**
Age	0.008***	0.005***	0.007***	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
College-educated	-0.044***	-0.006	-0.034***	-0.009*
	(0.005)	(0.004)	(0.005)	(0.004)
Marital status				
Married/registered partnership	Ref	Ref	Ref	Ref
Unmarried	0.007	-0.044*	0.028	0.034**
	(0.028)	(0.019)	(0.017)	(0.012)
Divorced	-0.072***	-0.048***	-0.022***	-0.006
	(0.006)	(0.005)	(0.005)	(0.004)
Widowed	-0.003	-0.006	0.033***	0.016***
	(0.012)	(0.009)	(0.006)	(0.004)
Renting	-0.038***	-0.023***	-0.047***	-0.023***
	(0.006)	(0.005)	(0.005)	(0.004)
Rural	0.045***	0.010**	0.058***	0.013***
	(0.005)	(0.004)	(0.004)	(0.003)
Province of residence				
Greater Helsinki	Ref	Ref	Ref	Ref
Lapland	-0.013	-0.021*	-0.005	-0.032***
	(0.013)	(0.010)	(0.011)	(0.008)
Oulu	0.01	-0.017*	0.020*	-0.021**
	(0.010)	(0.008)	(0.009)	(0.006)
Eastern Finland	-0.006	-0.018**	0	-0.032***
	(0.009)	(0.007)	(0.008)	(0.006)
Western Finland	-0.006	-0.016**	-0.008	-0.020***
	(0.007)	(0.006)	(0.006)	(0.005)
Southern Finland	-0.009	0.005	-0.008	-0.018***
	(0.007)	(0.006)	(0.007)	(0.005)
Åland Islands	-0.02	0.077**	-0.023	-0.048*
	(0.030)	(0.023)	(0.032)	(0.023)
Number of children	0.039***	0.018***	0.036***	0.014***
	(0.002)	(0.002)	(0.002)	(0.001)
Median age of children	-0.018***	-0.014***	-0.015***	-0.010***
	(0.000)	(0.000)	(0.000)	(0.000)
Any child college-educated	-0.052***	-0.013**	-0.053***	-0.021***
	(0.005)	(0.004)	(0.005)	(0.003)
Any child divorced	-0.012+	-0.007	-0.028***	-0.001
	(0.007)	(0.005)	(0.005)	(0.004)
Any child lost job at t-1	0.011	0.003	0.009	-0.003
	(0.008)	(0.006)	(0.007)	(0.005)
Constant	0.180**	0.199***	0.166**	0.269***
	-0.062	-0.048	-0.056	-0.041
Observations	23,034	21,680	25,939	25,143
Adjusted R^2	.10	.09	.09	.08

Note: observations pooled across the period 2003-2007
Ref = reference category
Standard errors in parentheses
+ p<.10, * p<.05, ** p<.01, *** p<.001

Table 3. Detailed estimates of the Oaxaca-Blinder decomposition of compositional effects on Finnish parents' distance to nearest, non-coresident adult child from 2003-2007 to 2013-2017

	Fathers		Mothers	
	Son	**Daughter**	**Son**	**Daughter**
Parent's characteristics				
Age	-0.4	-0.3	0.7	0.8
College-educated	0.3***	0.3***	0.7***	0.6***
Marital status: never married	-0.3	0.3	0.1	0.4***
Marital status: married	0.2	1.0***	0.1*	0.1**
Marital status: divorced	0.5***	0.5***	0.3***	-0.2*
Marital status: widowed	0.0	0.1	0.2**	0.3**
Homeownership	0.0	0.0	0.0	0.0
Urbanity of residence	0.4***	0.2***	0.0	-0.1+
Province: Lapland	0.6**	-0.1	0.0	-0.1
Province: Oulu	0.2***	0.7***	0.0	0.1
Province: Eastern Finland	0.2**	0.0	0.0	-0.1*
Province: Western Finland	-0.5***	-0.4*	-0.1	-0.1
Province: Southern Finland	0.9***	0.7***	-0.4*	-0.3*
Province: Åland Islands	0.0	0.0	0.0	0.0
Province: Greater Helsinki	1.3***	1.3***	0.9***	0.6**
Children's characteristics				
Number of children	-0.5***	-0.5***	0.8***	0.7***
Median age	-0.2**	-0.1	-0.3***	-0.2**
Anyone college-educated	0.4***	0.8***	0.7***	0.9***
Anyone divorced	0.0	0.0	-0.04**	0.0
Anyone lost job in the past year	0.0	0.0	0.0	0.0

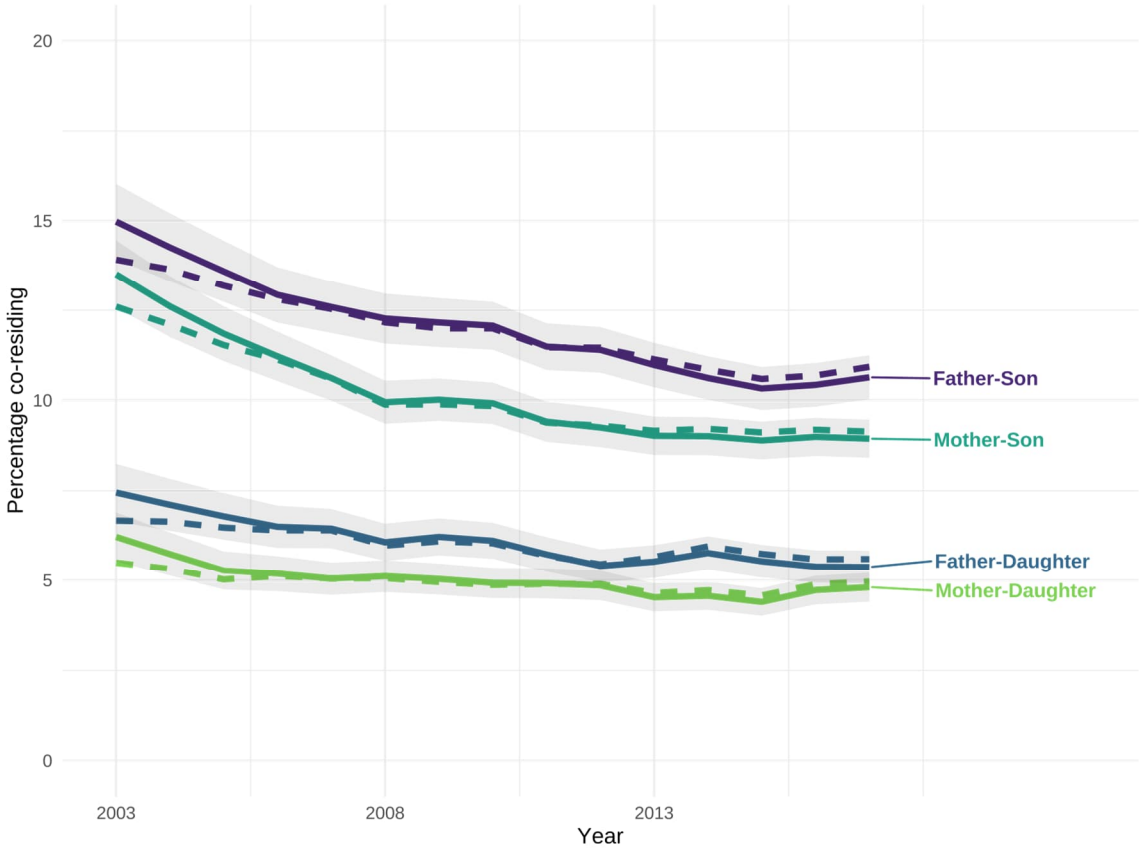
Values expressed in minutes; standard errors in parentheses
+ p < .10; * p < .05; ** p < .01; *** p < .001

Table 4. Detailed estimates of the Oaxaca-Blinder decomposition of coefficient effects on Finnish parents' co-residence with an adult child from 2003-2007 to 2013-2017

	Fathers		Mothers	
	Son	**Daughter**	**Son**	**Daughter**
Parent's characteristics				
Age	-0.100	-0.100	-0.241***	0.000
Education: below college	-0.004+	0.000	-0.008**	0.000
Education: college	0.000	0.000	0.002**	0.000
Marital status: never married	0.000	0.000	-0.010***	-0.003+
Marital status: married	0.000	0.000	0.002***	0.000
Marital status: divorced	0.005*	0.003*	0.010***	0.004***
Marital status: widowed	-0.003*	-0.002*	-0.006***	-0.002***
Housing tenure: renting	0.000	0.000	0.000	0.000
Housing tenure: owns, others	0.000	-0.012*	0.000	0.000
Urbanity: rural	0.000	0.000	0.000	0.000
Urbanity: urban	0.000	0.000	0.000	0.000
Province: Lapland	0.000	0.000	0.000	0.000
Province: Oulu	-0.002**	0.000	-0.002**	-0.001*
Province: Eastern Finland	-0.004***	0.000	-0.002+	0.000
Province: Western Finland	-0.006*	0.000	0.000	0.000
Province: Southern Finland	0.000	-0.003*	0.000	0.000
Province: Åland Islands	0.000*	0.000	0.000	0.000
Province: Greater Helsinki	0.000	0.000	0.002*	0.000
Children's characteristics				
Number of children	-0.050***	-0.008+	-0.039***	0.000
Median age	0.103***	0.160***	0.175***	0.086***
Education: no college-educated	-0.006*	0.000	0.000	-0.003+
Education: any college-educated	0.002*	0.000	0.000	0.000
Marital status: no one divorced	0.000	0.000	-0.009***	0.000
Marital status: anyone divorced	0.000	0.000	0.002***	0.000
Employment: no one lost job	0.000	0.000	0.000	0.000
Employment: anyone lost job	0.000	0.000	0.000	0.000
Constant	0.000	-0.100	0.100	-0.107*

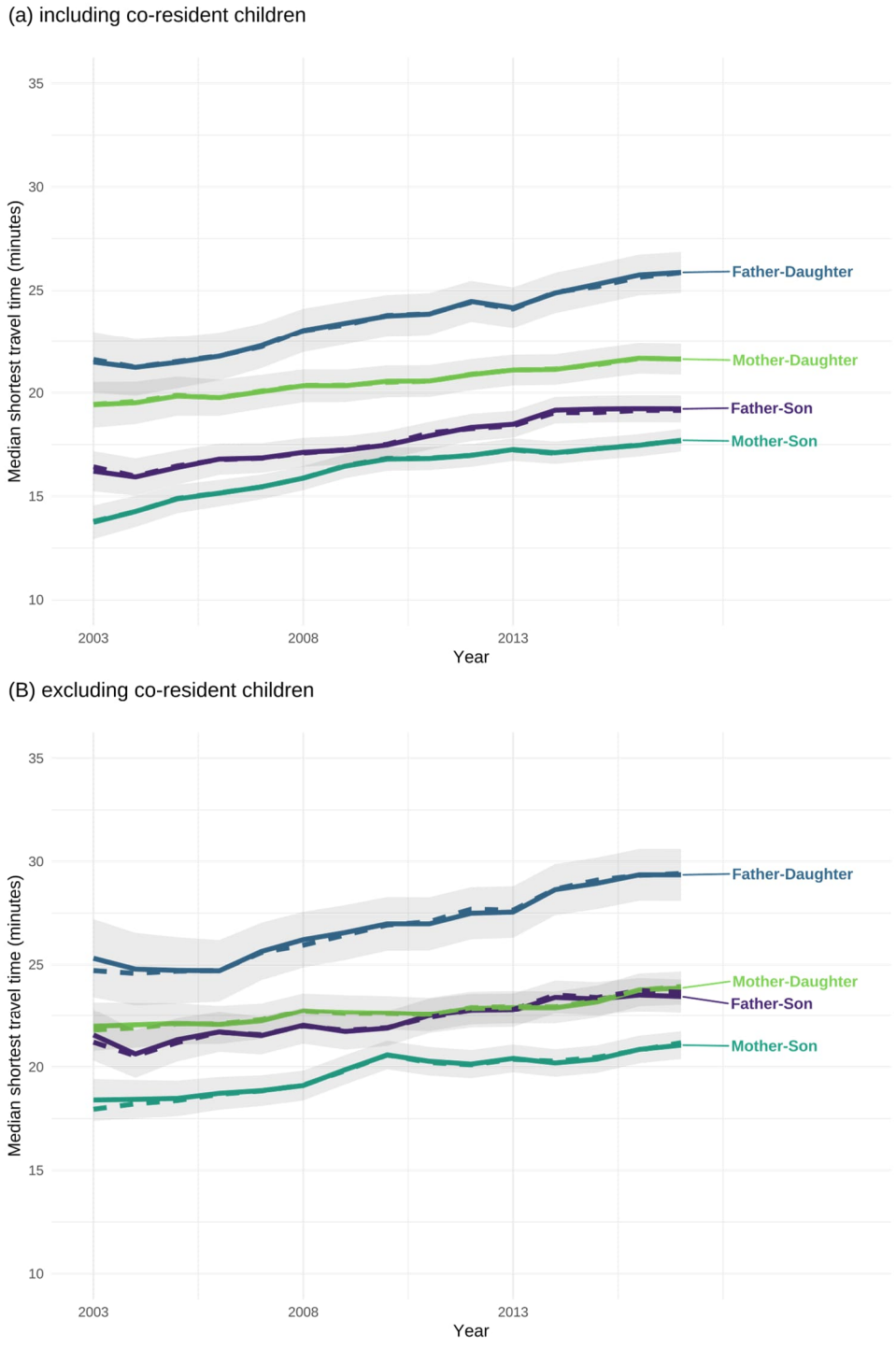
Standard errors in parentheses
+ p < .10; * p < .05; ** p < .01; *** p < .001

Figure 1. Percentage of Finnish mothers and fathers co-residing with an adult child (2003-2017)



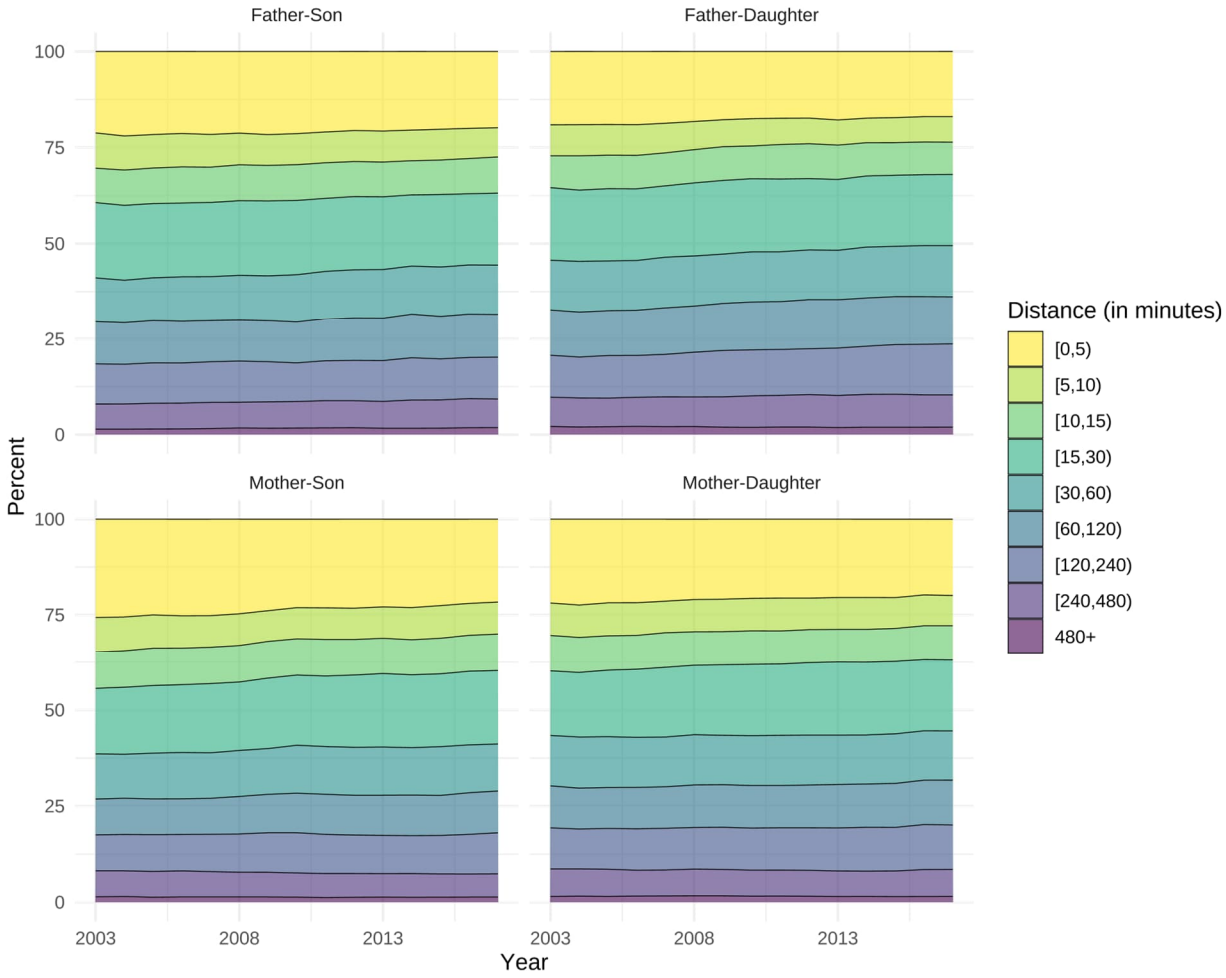
Note: Authors' calculation using 5% data from Finnish population register. Dashed lines represent age-adjusted trends. Shaded areas represent 95% confidence intervals.

Figure 2. Median distance (in minutes) of Finnish mothers and fathers to their nearest adult sons and daughters, (a) including and (b) excluding co-resident children (2003-2017)



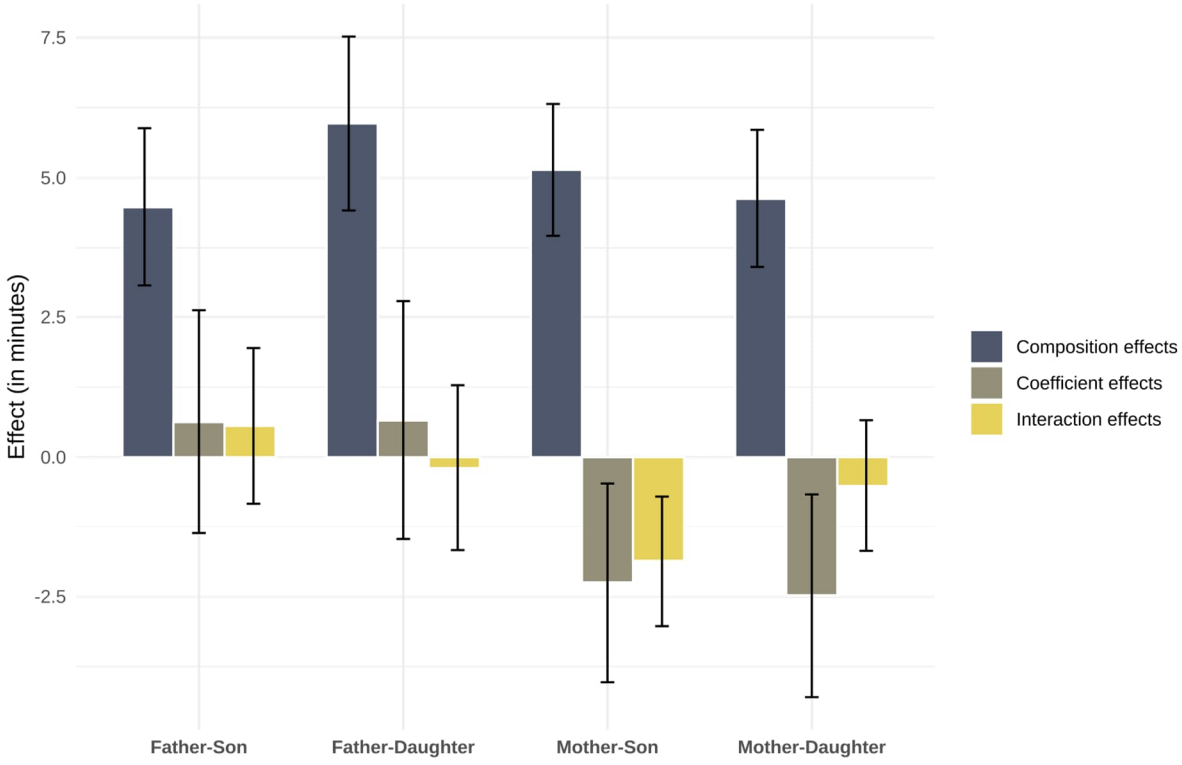
Note: Authors' calculation using 5% data from Finnish population register. Dashed lines represent age-adjusted trends. Shaded areas represent 95% confidence intervals.

Figure 3. Annual percent distribution of Finnish parents, by distance to nearest, non-coresident adult son and daughter (2003-2017)



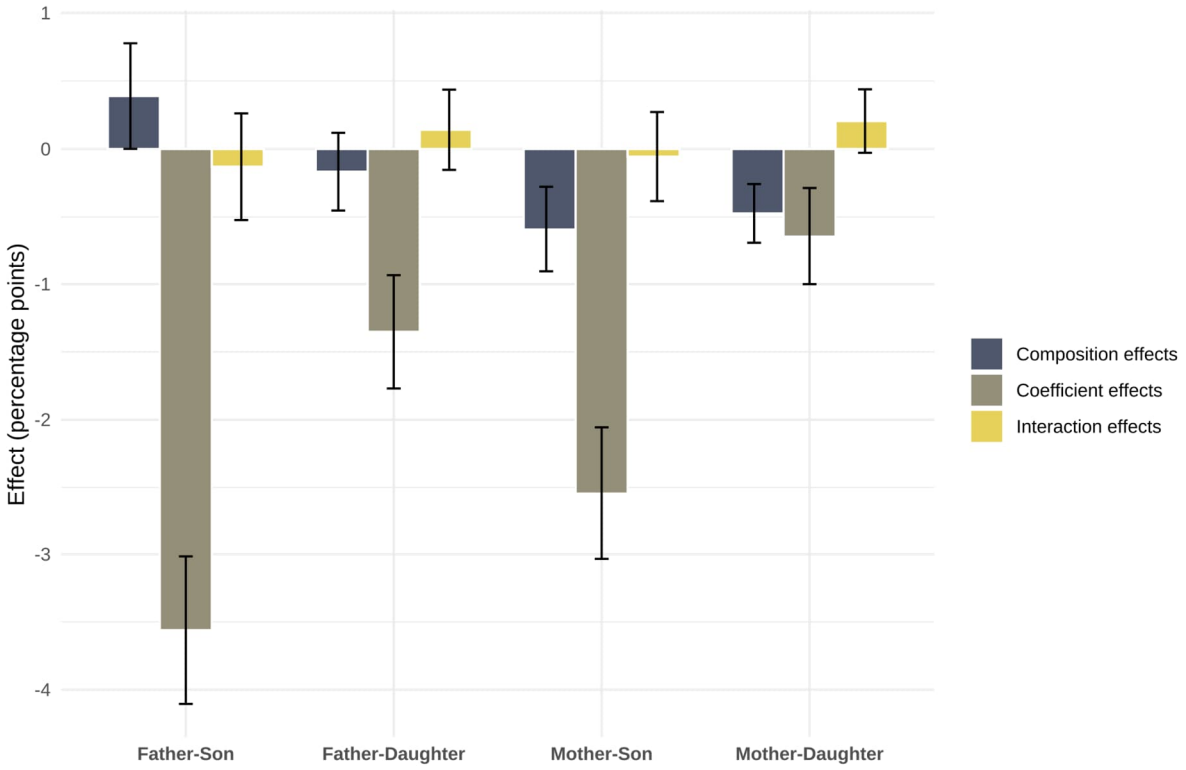
Source: Authors' calculation using 5% data from Finnish population register.

Figure 4a. Overall results of the Oaxaca-Blinder decomposition of the change in Finnish parents' distance to their nearest adult child from 2003-2007 to 2013-2017, by gender of parent and nearest child



Note: Authors' calculation using 5% data from Finnish population register. Composition effects, in blue, represent the contribution of changing population composition (such as educational expansion and increased rates of divorces) to the change in distance (in minutes). The tan bars represent the coefficient effect, or the contribution of the changes in the influence of explanatory variables on distance. The interaction effects, in yellow, account for the simultaneous effect of changing population composition and associations over the two periods. A positive (negative) effect implies that the component contributes to increased (decreased) distance over time. Bars represent 95% confidence intervals.

Figure 4b. Overall results of the Oaxaca-Blinder decomposition of the change in the percentage of Finnish parents co-residing with an adult child from 2003-2007 to 2013-2017, by gender of parent and nearest child



Note: Authors' calculation using 5% data from Finnish population register. Composition effects, in blue, represent the contribution of changing population composition (such as educational expansion and increased rates of divorces) to the change in the prevalence of co-residence. The tan bars represent the coefficient effect, or the contribution of the changes in the influence of explanatory variables on co-residence. The interaction effects, in yellow, account for the simultaneous effect of changing population composition and associations over the two periods. A positive (negative) effect implies that the component contributes to increased (decreased) probability of co-residence over time. Bars represent 95% confidence intervals.

SUPPLEMENTARY MATERIALS

Table S1. Ordinary least squares regression model of distance (in minutes) to the nearest, non-coresident child, by gender of the parent and child: period 2013-2017

	Father's distance to nearest		Mother's distance to nearest	
	son	**daughter**	**son**	**daughter**
Age	0.1	0.6*	0	0.8***
	(0.2)	(0.3)	(0.2)	(0.2)
College-educated	16.2***	12.9***	6.2***	10.4***
	(1.4)	(1.4)	(1.2)	(1.3)
Marital status				
Married/registered partnership	Ref	Ref	Ref	Ref
Unmarried	-2.8	7.9*	3.5	8.1**
	(3.3)	(3.5)	(2.9)	(2.9)
Divorced	14.4***	17.9***	7.8***	5.0***
	(1.5)	(1.6)	(1.3)	(1.4)
Widowed	7.4*	-5.5	-3.1+	-2.7
	(3.7)	(3.7)	(1.8)	(1.8)
Renting	9.0***	1.8	3.5*	-0.3
	(1.7)	(1.8)	(1.4)	(1.4)
Rural	22.6***	29.7***	22.0***	30.1***
	(1.3)	(1.4)	(1.2)	(1.2)
Province of residence				
Greater Helsinki				
Lapland	191.4***	213.6***	142.0***	180.1***
	(3.5)	(3.7)	(3.0)	(3.1)
Oulu	82.2***	100.7***	75.3***	87.3***
	(2.7)	(2.8)	(2.4)	(2.4)
Eastern Finland	77.8***	88.0***	72.6***	78.6***
	(2.5)	(2.6)	(2.2)	(2.2)
Western Finland	30.3***	38.9***	25.3***	34.0***
	(2.0)	(2.1)	(1.8)	(1.8)
Southern Finland	25.5***	34.1***	21.3***	24.8***
	(2.1)	(2.2)	(1.8)	(1.8)
Aland	71.8***	68.9***	44.0***	61.0***
	(8.5)	(9.8)	(7.7)	(7.9)
Number of children	-10.9***	-11.3***	-10.3***	-10.9***
	(0.5)	(0.6)	(0.5)	(0.5)
Median age of children	29.6***	24.5***	27.7***	24.6***
	(1.4)	(1.4)	(1.2)	(1.2)
Any child college-educated	3.5*	-5.4**	7.3***	-0.5
	(1.8)	(1.8)	(1.4)	(1.4)
Any child divorced	2	2.3	0.6	3.4
	(2.0)	(2.0)	(1.8)	(1.8)
Any child lost job at t-1	-0.1	-0.5***	-0.4**	-1.0***
	(0.1)	(0.1)	(0.1)	(0.1)
Constant	26.6	15.7	47.8***	20.8
	(14.4)	(14.9)	(12.5)	(12.8)
Observations	37,449	36,983	43,034	42,489

Note: observations pooled across the period 2013-2017
Ref = reference category
Standard errors in parentheses
+ p<.10, * p<.05, ** p<.01, *** p<.001

Table S2. Linear probability model of co-residence with a child, by gender of the parent and child: period 2013-2017

	Father's distance to nearest		**Mother's distance to nearest**	
	son	**daughter**	**son**	**daughter**
Age	0.007***	0.004***	0.003***	0.002***
	(0.001)	0.000	(0.001)	0.000
College-educated	-0.033***	0	-0.014***	-0.008***
	(0.003)	(0.003)	(0.003)	(0.002)
Marital status				
Married/registered partnership	Ref	Ref	Ref	Ref
Unmarried	-0.002	-0.004	0.017*	0.039***
	(0.008)	(0.006)	(0.007)	(0.005)
Divorced	-0.051***	-0.032***	-0.024***	-0.002
	(0.004)	(0.003)	(0.003)	(0.003)
Widowed	0.020*	-0.003	0.042***	0.027***
	(0.009)	(0.007)	(0.004)	(0.003)
Renting	-0.037***	-0.026***	-0.021***	-0.015***
	(0.004)	(0.003)	(0.004)	(0.003)
Rural	0.030***	-0.001	0.027***	0
	(0.003)	(0.003)	(0.003)	(0.002)
Province of residence				
Greater Helsinki				
Lapland	-0.021*	-0.023***	-0.003	-0.019***
	(0.009)	(0.007)	(0.008)	(0.006)
Oulu	-0.030***	-0.028***	-0.024***	-0.033***
	(0.007)	(0.005)	(0.006)	(0.005)
Eastern Finland	-0.056***	-0.036***	-0.032***	-0.038***
	(0.006)	(0.005)	(0.005)	(0.004)
Western Finland	-0.035***	-0.026***	-0.024***	-0.025***
	(0.005)	(0.004)	(0.004)	(0.003)
Southern Finland	-0.033***	-0.018***	-0.019***	-0.023***
	(0.005)	(0.004)	(0.005)	(0.003)
Aland	0.041*	0.060***	-0.044*	-0.021
	(0.021)	(0.018)	(0.020)	(0.015)
Number of children	0.017***	0.015***	0.020***	0.014***
	(0.001)	(0.001)	(0.001)	(0.001)
Median age of children	-0.037***	-0.018***	-0.047***	-0.014***
	(0.004)	(0.003)	(0.003)	(0.002)
Any child college-educated	0	-0.003	-0.006	-0.006*
	(0.004)	(0.003)	(0.004)	(0.003)
Any child divorced	0.002	0.007	0.011*	0.001
	(0.005)	(0.004)	(0.005)	(0.003)
Any child lost job at t-1	-0.015***	-0.009***	-0.010***	-0.007***
	0.000	0.000	0.000	0.000
Constant	0.164***	0.116***	0.258***	0.155***
	-0.036	-0.028	-0.032	-0.024
Observations	39,763	38,075	45,304	43,588

Note: observations pooled across the period 2013-2017
Ref = reference category
Standard errors in parentheses
+ p<.10, * p<.05, ** p<.01, *** p<.001

Table S3.1. Detailed estimates of the Oaxaca-Blinder decomposition of coefficient effects on older Finnish parents' distance to nearest, non-coresident adult child from 2003-2007 to 2013-2017

	Fathers		Mothers	
	Son	**Daughter**	**Son**	**Daughter**
Parent's characteristics				
Age	25.9	48.8	-30.7	14.1
	(28.0)	(29.8)	(25.6)	(26.1)
Education: below college	0.9	1.3	3.659***	1.3
	(0.8)	(0.9)	(0.9)	(0.9)
Education: college	-0.4	-0.5	-0.944***	-0.3
	(0.3)	(0.3)	(0.2)	(0.2)
Marital status: never married	-1.4	2.4	-1.0	-0.3
	(1.1)	(1.2)	(0.9)	(1.0)
Marital status: married	0.3	-0.457+	0.2	0.1
	(0.2)	(0.2)	(0.2)	(0.2)
Marital status: divorced	1.914**	-0.5	-1.255*	0.5
	(0.7)	(0.7)	(0.6)	(0.6)
Marital status: widowed	-1.090**	0.3	0.695*	-0.3
	(0.4)	(0.4)	(0.3)	(0.4)
Housing tenure: renting	0.0	-0.1	0.0	-0.165*
	(0.0)	(0.1)	(0.1)	(0.1)
Housing tenure: owns, others	-0.9	7.235**	1.6	2.4
	(2.5)	(2.4)	(1.4)	(1.4)
Urbanity: rural	-0.3	0.3	-0.5	1.503**
	(0.6)	(0.5)	(0.4)	(0.5)
Urbanity: urban	0.0	-0.1	0.1	0.2
	(0.2)	(0.2)	(0.3)	(0.4)
Province: Lapland	-0.2	-0.616**	-0.437**	-0.324+
	(0.2)	(0.2)	(0.2)	(0.2)
Province: Oulu	-0.4	-1.143***	0.5	-0.1
	(0.3)	(0.3)	(0.3)	(0.3)
Province: Eastern Finland	-0.6	0.880*	-0.1	-0.662+
	(0.4)	(0.4)	(0.4)	(0.4)
Province: Western Finland	-1.758+	0.3	0.8	-0.4
	(0.9)	(1.0)	(0.9)	(0.9)
Province: Southern Finland	0.1	2.195**	2.252***	-0.1
	(0.7)	(0.8)	(0.6)	(0.6)
Province: Åland	0.1	0.1	-0.1	0.1
	(0.1)	(0.1)	(0.0)	(0.0)
Province: Greater Helsinki	-0.3	-0.3	1.803***	-0.4
	(0.5)	(0.5)	(0.4)	(0.4)
Children's characteristics				
Number of children	1.1	-2.8	1.5	-2.3
	(2.1)	(2.2)	(1.9)	(1.9)
Median age	23.614**	-11.4	28.123***	-19.733*
	(7.7)	(8.0)	(7.9)	(7.8)
Education: no college-educated	-2.525**	-0.1	1.807*	1.875*
	(0.9)	(0.9)	(0.8)	(0.8)
Education: any college-educated	0.842**	0.0	-0.581*	-0.645*
	(0.3)	(0.3)	(0.3)	(0.3)
Marital status: no one divorced	1.3	2.2	0.1	-2.094*
	(1.2)	(1.2)	(1.0)	(0.9)
Marital status: anyone divorced	-0.2	-0.397+	0.0	0.488*
	(0.2)	(0.2)	(0.2)	(0.2)
Employment: no one lost job	0.0	-2.4	0.2	-4.006**
	(1.5)	(1.5)	(1.3)	(1.3)
Employment: anyone lost job	0.0	0.3	0.0	0.452**
	(0.1)	(0.2)	(0.1)	(0.1)
Constant	-45.442+	-45.0	-10.1	6.4

	(26.1)	(27.9)	(23.5)	(24.0)

Values expressed in minutes; standard errors in parentheses
+ p < .10; * p < .05; ** p < .01; *** p < .001

Table S3.2 Detailed estimates of the Oaxaca-Blinder decomposition of interaction effects on older Finnish parents' distance to nearest, non-coresident adult child from 2003-2007 to 2013-2017

	Fathers		Mothers	
	Son	**Daughter**	**Son**	**Daughter**
Parent's characteristics				
Age	0.6	1.1	-0.7	0.3
	(0.6)	(0.7)	(0.5)	(0.6)
Education: below college	0.0	-0.1	-0.448***	-0.1
	(0.0)	(0.0)	(0.1)	(0.1)
Education: college	0.0	-0.1	-0.448***	-0.1
	(0.0)	(0.0)	(0.1)	(0.1)
Marital status: never married	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Marital status: married	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Marital status: divorced	-0.089**	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Marital status: widowed	-0.089**	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Housing tenure: renting	0.0	-0.2	0.0	-0.296*
	(0.2)	(0.2)	(0.1)	(0.1)
Housing tenure: owns, others	0.1	-0.624**	-0.1	-0.084+
	(0.2)	(0.2)	(0.1)	(0.0)
Urbanity: rural	-0.1	0.1	-0.1	0.283**
	(0.1)	(0.2)	(0.1)	(0.1)
Urbanity: urban	0.0	0.0	0.0	-0.1
	(0.0)	(0.0)	(0.1)	(0.1)
Province: Lapland	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Province: Oulu	-0.1	-0.258***	0.0	0.0
	(0.0)	(0.1)	(0.0)	(0.0)
Province: Eastern Finland	-0.1	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Province: Western Finland	-0.069+	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Province: Southern Finland	0.0	-0.115*	0.082*	0.0
	(0.1)	(0.1)	(0.0)	(0.0)
Province: Åland	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Province: Greater Helsinki	0.0	0.0	-0.179**	0.0
	(0.1)	(0.1)	(0.1)	(0.0)
Children's characteristics				
Number of children	0.0	-0.1	0.0	0.1
	(0.0)	(0.0)	(0.1)	(0.1)
Median age	0.138*	-0.1	0.229**	-0.216*
	(0.1)	(0.1)	(0.1)	(0.1)
Education: no college-educated	0.114**	0.0	-0.102*	-0.145*
	(0.0)	(0.1)	(0.0)	(0.1)
Education: any college-educated	0.114**	0.0	-0.102*	-0.145*
	(0.0)	(0.1)	(0.0)	(0.1)
Marital status: no one divorced	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Marital status: anyone divorced	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Employment: no one lost job	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Employment: anyone lost job	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)

Values expressed in minutes; standard errors in parentheses

+ p < .10; * p < .05; ** p < .01; *** p < .001

Table S4.1. Detailed estimates of the Oaxaca-Blinder decomposition of compositional effects on older Finnish parents' co-residence with an adult child from 2003-2007 to 2013-2017

	Fathers		Mothers	
	Son	**Daughter**	**Son**	**Daughter**
Parent's characteristics				
Age	0.011***	0.007***	0.009***	0.003**
	(0.0)	(0.0)	(0.0)	(0.0)
Education: below college	-0.001***	0.0	-0.002***	-0.000*
	0.0	0.0	0.0	0.0
Education: college	-0.001***	0.0	-0.002***	-0.000*
	0.0	0.0	0.0	0.0
Marital status: never married	-0.000*	-0.000*	-0.000***	-0.000***
	0.0	0.0	0.0	0.0
Marital status: married	-0.000*	-0.000*	-0.000***	-0.000***
	0.0	0.0	0.0	0.0
Marital status: divorced	0.001***	0.000*	0.0	-0.000*
	0.0	0.0	0.0	0.0
Marital status: widowed	0.001***	0.000*	0.0	-0.000*
	0.0	0.0	0.0	0.0
Housing tenure: renting	0.0	0.0	0.0	0.001*
	(0.0)	0.0	0.0	0.0
Housing tenure: owns, others	-0.001*	-0.002***	0.0	0.000**
	(0.0)	0.0	0.0	0.0
Urbanity: rural	-0.002***	-0.001***	-0.001***	-0.001***
	0.0	0.0	0.0	0.0
Urbanity: urban	0.0	-0.000+	-0.001***	0.0
	0.0	0.0	0.0	0.0
Province: Lapland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Oulu	0.0	-0.000**	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Eastern Finland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Western Finland	0.0	-0.000*	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Southern Finland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Åland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Greater Helsinki	0.0	0.0	0.0	-0.000**
	0.0	0.0	0.0	0.0
Children's characteristics				
Number of children	0.002***	0.001***	-0.003***	-0.001***
	0.0	0.0	0.0	0.0
Median age	-0.004***	-0.005***	-0.005***	-0.004***
	(0.0)	(0.0)	(0.0)	0.0
Education: no college-educated	-0.001***	-0.000**	-0.001***	-0.001***
	0.0	0.0	0.0	0.0
Education: any college-educated	-0.001***	-0.000**	-0.001***	-0.001***
	0.0	0.0	0.0	0.0
Marital status: no one divorced	0.0	0.0	0.000*	0.0
	0.0	0.0	0.0	0.0
Marital status: anyone divorced	0.0	0.0	0.000*	0.0
	0.0	0.0	0.0	0.0
Employment: no one lost job	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Employment: anyone lost job	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0

Values expressed in minutes; standard errors in parentheses
+ p < .10; * p < .05; ** p < .01; *** p < .001

Table S4.2. Detailed estimates of the Oaxaca-Blinder decomposition of interaction effects on older Finnish parents' co-residence with an adult child from 2003-2007 to 2013-2017

	Fathers		Mothers	
	Son	**Daughter**	**Son**	**Daughter**
Parent's characteristics				
Age	0.0	0.0	-0.005***	0.0
	(0.0)	(0.0)	(0.0)	(0.0)
Education: below college	0.0	0.0	0.001**	0.0
	0.0	0.0	0.0	0.0
Education: college	0.0	0.0	0.001**	0.0
	0.0	0.0	0.0	0.0
Marital status: never married	0.0	0.0	0.000**	0.0
	0.0	0.0	0.0	0.0
Marital status: married	0.0	0.0	0.000**	0.0
	0.0	0.0	0.0	0.0
Marital status: divorced	-0.000*	-0.000+	0.0	0.0
	0.0	0.0	0.0	0.0
Marital status: widowed	-0.000*	-0.000+	0.0	0.0
	0.0	0.0	0.0	0.0
Housing tenure: renting	0.0	0.0	0.0	0.0
	(0.0)	0.0	0.0	0.0
Housing tenure: owns, others	0.0	0.001*	0.0	0.0
	(0.0)	0.0	0.0	0.0
Urbanity: rural	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Urbanity: urban	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Lapland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Oulu	-0.000*	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Eastern Finland	-0.000*	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Western Finland	-0.000+	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Southern Finland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Åland	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Province: Greater Helsinki	0.0	0.0	-0.000+	0.0
	0.0	0.0	0.0	0.0
Children's characteristics				
Number of children	-0.001***	-0.000+	0.001***	0.0
	0.0	0.0	0.0	0.0
Median age	0.001***	0.002***	0.002***	0.001***
	0.0	0.0	0.0	0.0
Education: no college-educated	0.000*	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Education: any college-educated	0.000*	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Marital status: no one divorced	0.0	0.0	-0.000*	0.0
	0.0	0.0	0.0	0.0
Marital status: anyone divorced	0.0	0.0	-0.000*	0.0
	0.0	0.0	0.0	0.0
Employment: no one lost job	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
Employment: anyone lost job	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0

Values expressed in minutes; standard errors in parentheses
+ p < .10; * p < .05; ** p < .01; *** p < .001

Table S5. Median distance (in minutes) of married mothers and fathers to their nearest, non-coresident sons and daughters

Year	Fathers		Mothers	
	Sons	Daughters	Sons	Daughters
1998	18.6	22.1	18.1	22.7
1999	20.0	23.5	16.8	23.7
2000	20.1	22.6	17.7	23.6
2001	19.5	22.6	18.3	24.3
2002	20.3	22.5	18.5	23.6
2003	20.5	23.2	18.6	23.3
2004	19.9	23.2	18.4	23.3
2005	20.4	23.2	18.5	23.5
2006	20.4	23.5	18.5	23.8
2007	20.4	24.1	18.7	23.7
2008	20.7	24.9	19.1	24.3
2009	20.5	25.3	19.5	24.2
2010	20.5	25.3	20.0	24.4
2011	20.9	25.5	19.6	24.1
2012	21.1	25.7	19.5	24.2
2013	21.1	25.7	19.5	24.3
2014	21.5	26.1	19.6	24.1
2015	21.3	25.9	19.9	24.4
2016	21.3	26.1	20.1	24.4
2017	21.1	26.1	20.0	24.4

Figure S1. Map of postal codes and their centroids in Finland

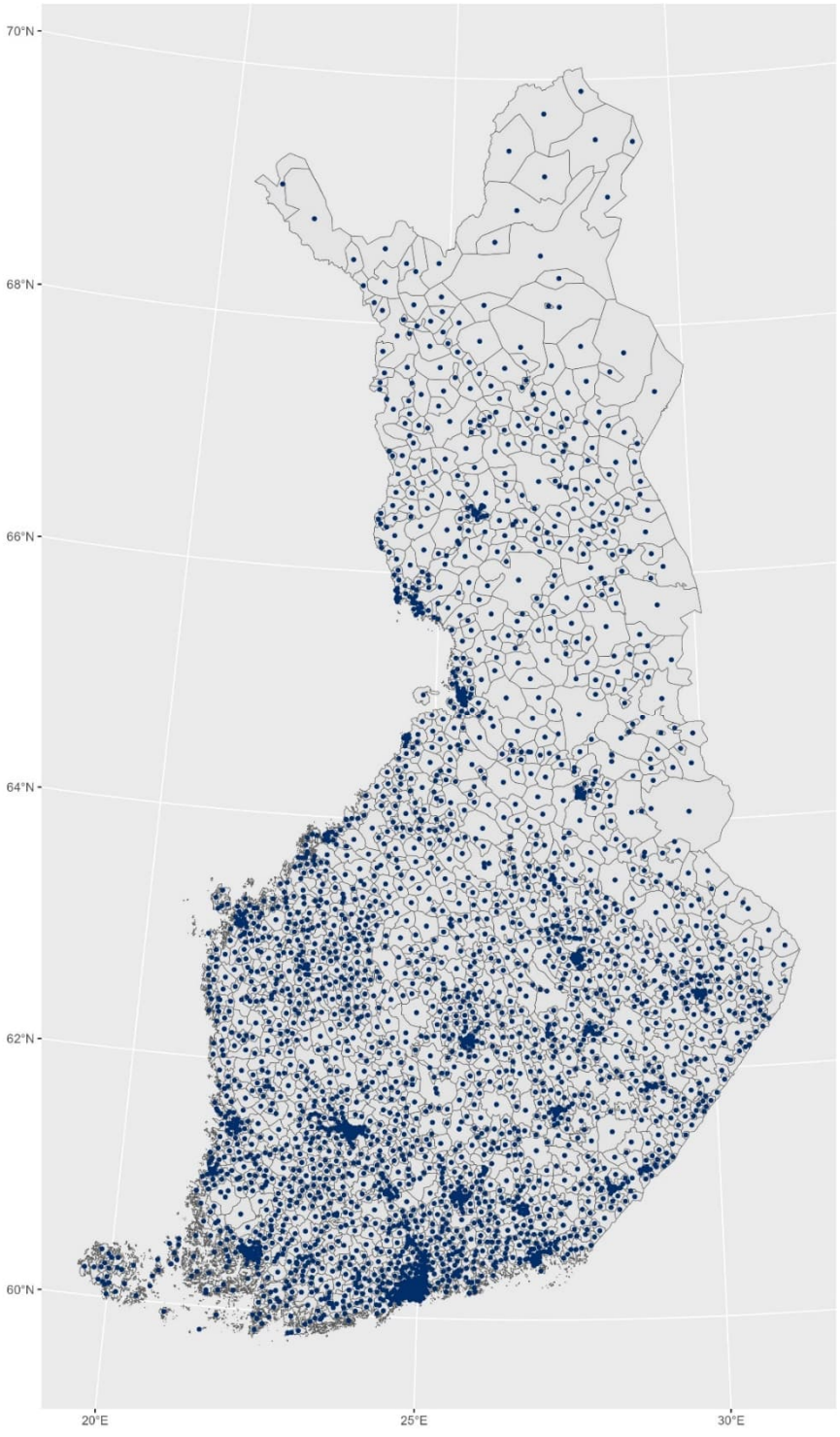
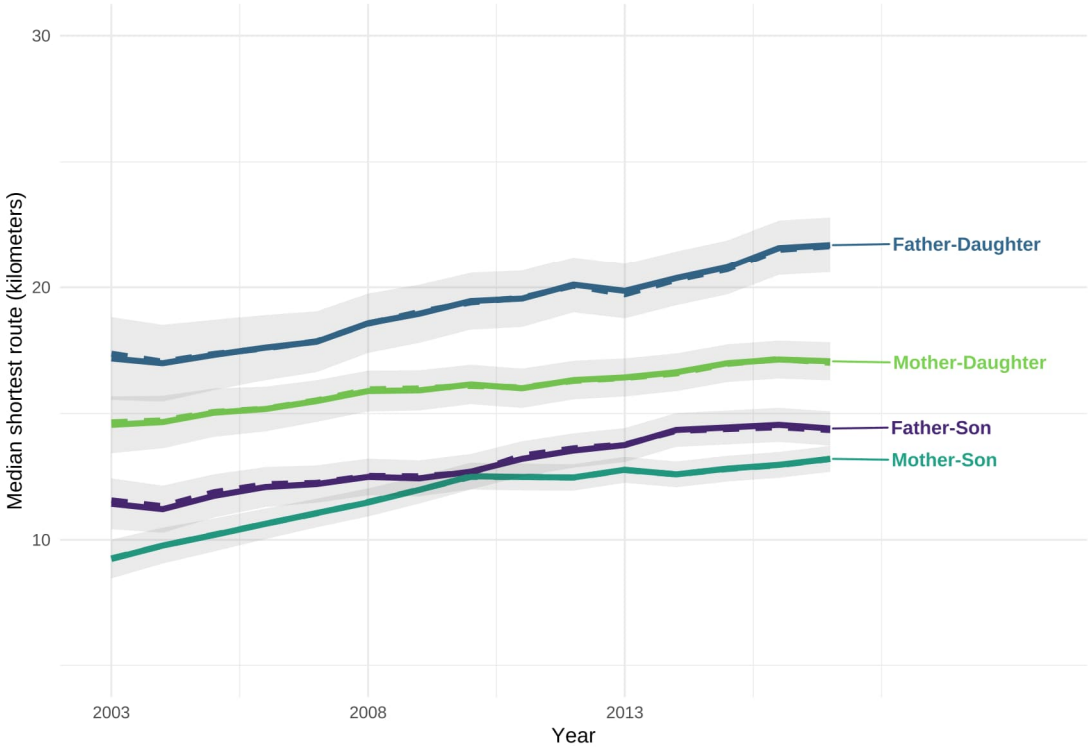


Figure S2. Median distance (in kilometers) of older Finnish mothers and fathers to their nearest adult sons and daughters, (a) including and (b) excluding co-resident children (2003-2017)

(A) including co-resident children



(B) excluding co-resident children

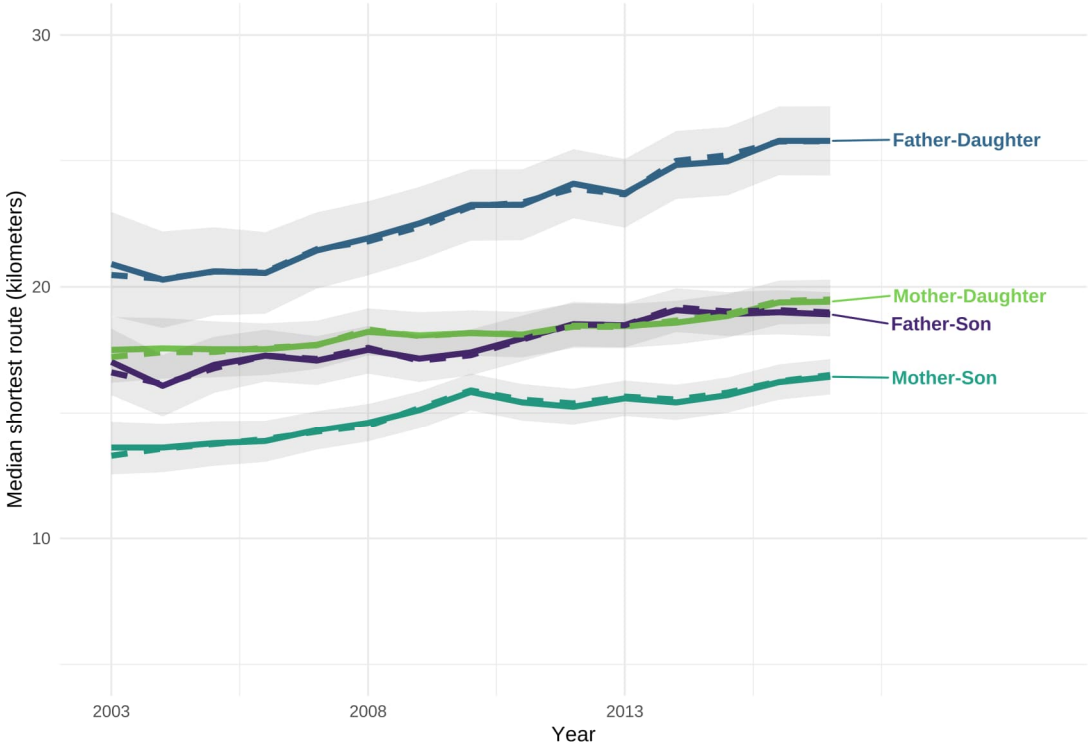
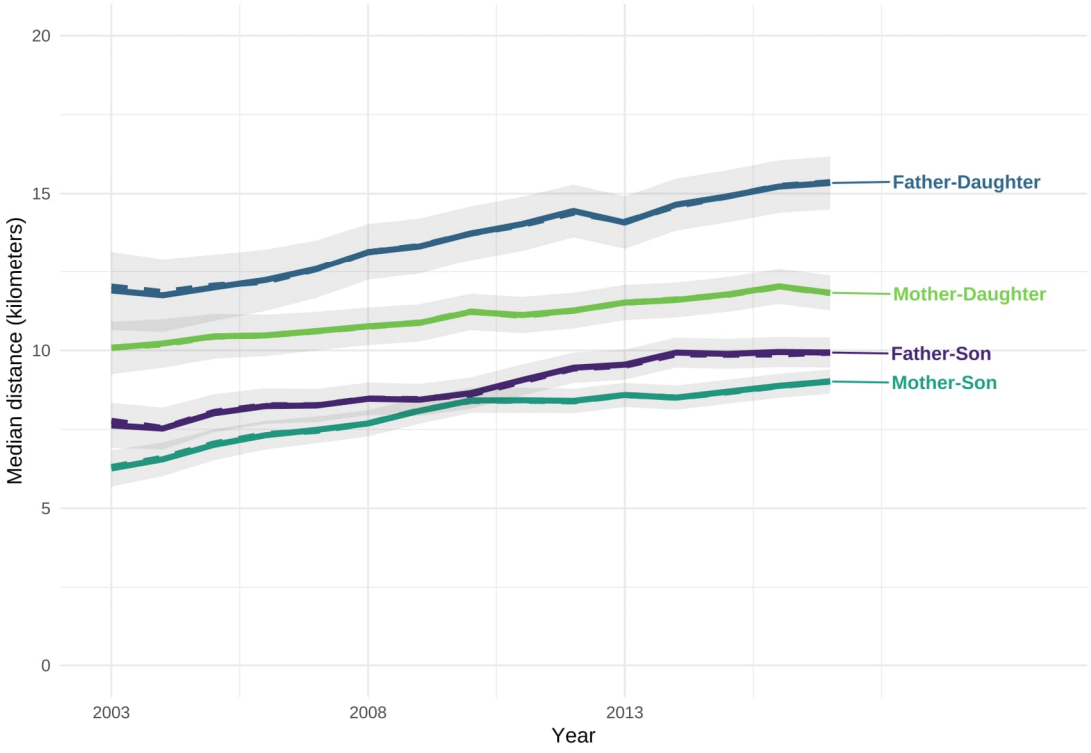


Figure S3. Median distance (in kilometers) of older Finnish mothers and fathers to their nearest adult sons and daughters, (a) including and (b) excluding co-resident children (2003-2017): using geodesic distance

(A) including co-resident children



(B) excluding co-resident children

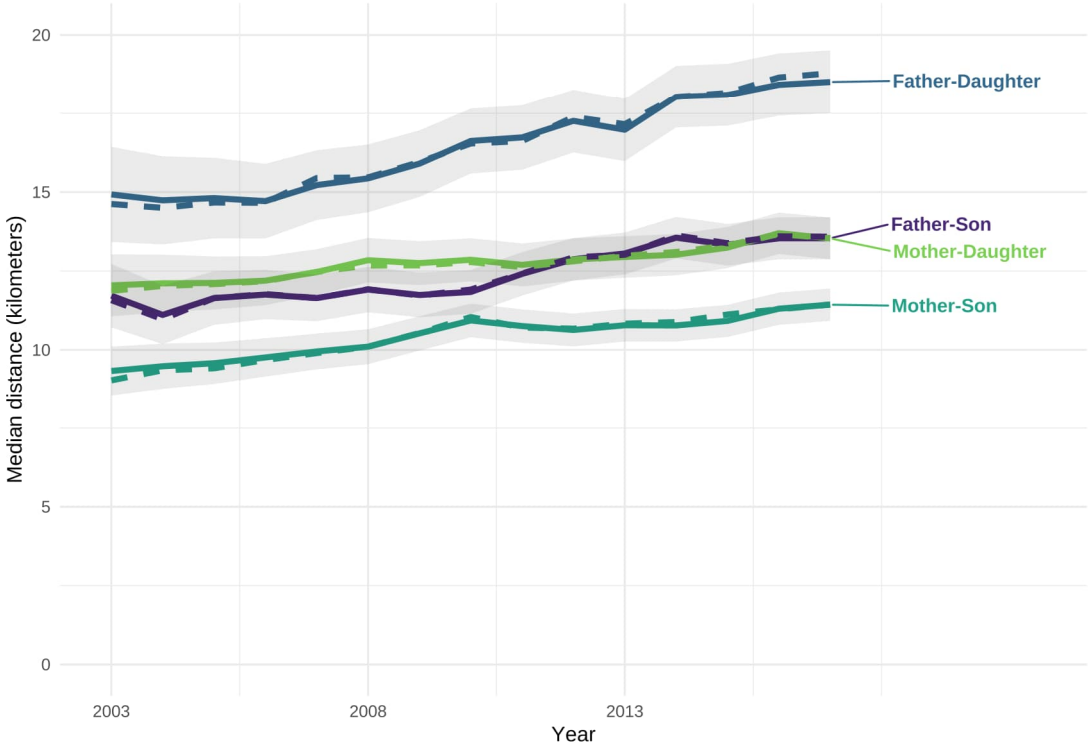


Figure S3. Overall results of the Oaxaca-Blinder decomposition of the change in older Finnish parents' distance to adult children from 2003-2007 to 2013-2017, by gender of parent and nearest child: using shortest route in kilometers

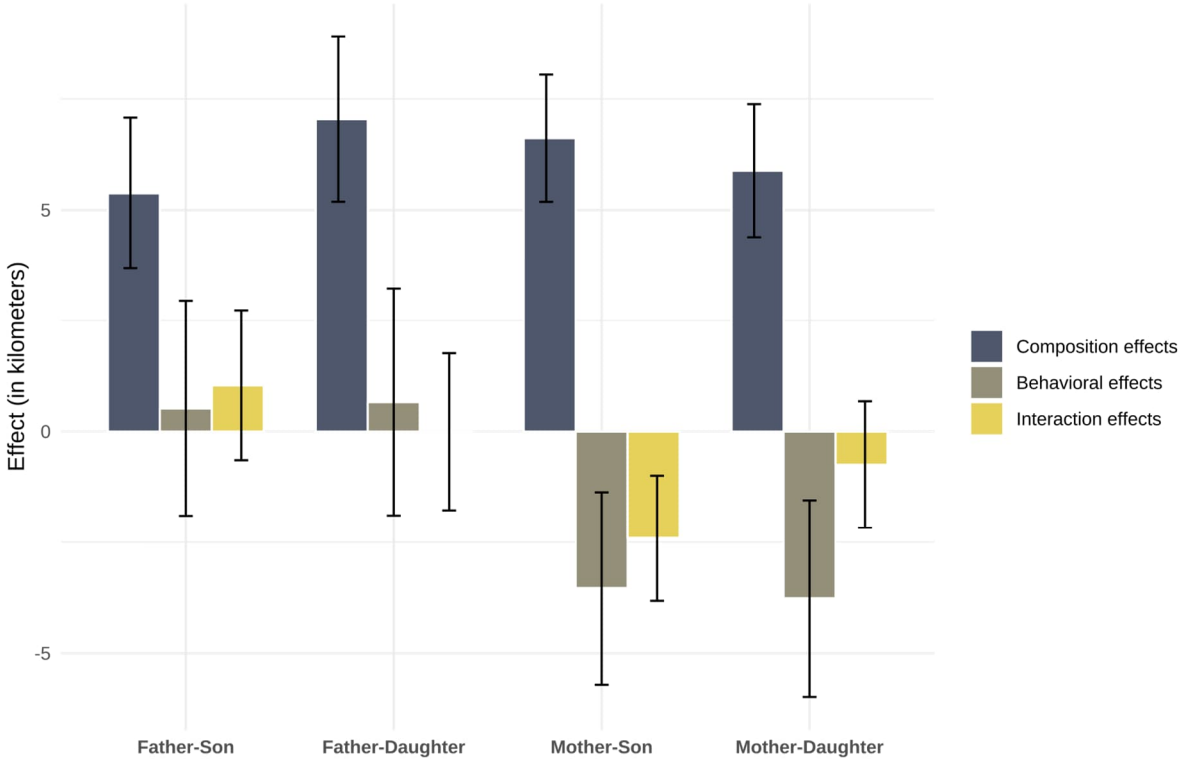


Figure S4. Overall results of the Oaxaca-Blinder decomposition of the change in older Finnish parents' distance to adult children (in minutes) from 2003-2007 to 2013-2017, by gender of parent and nearest child: excluding Aland islands

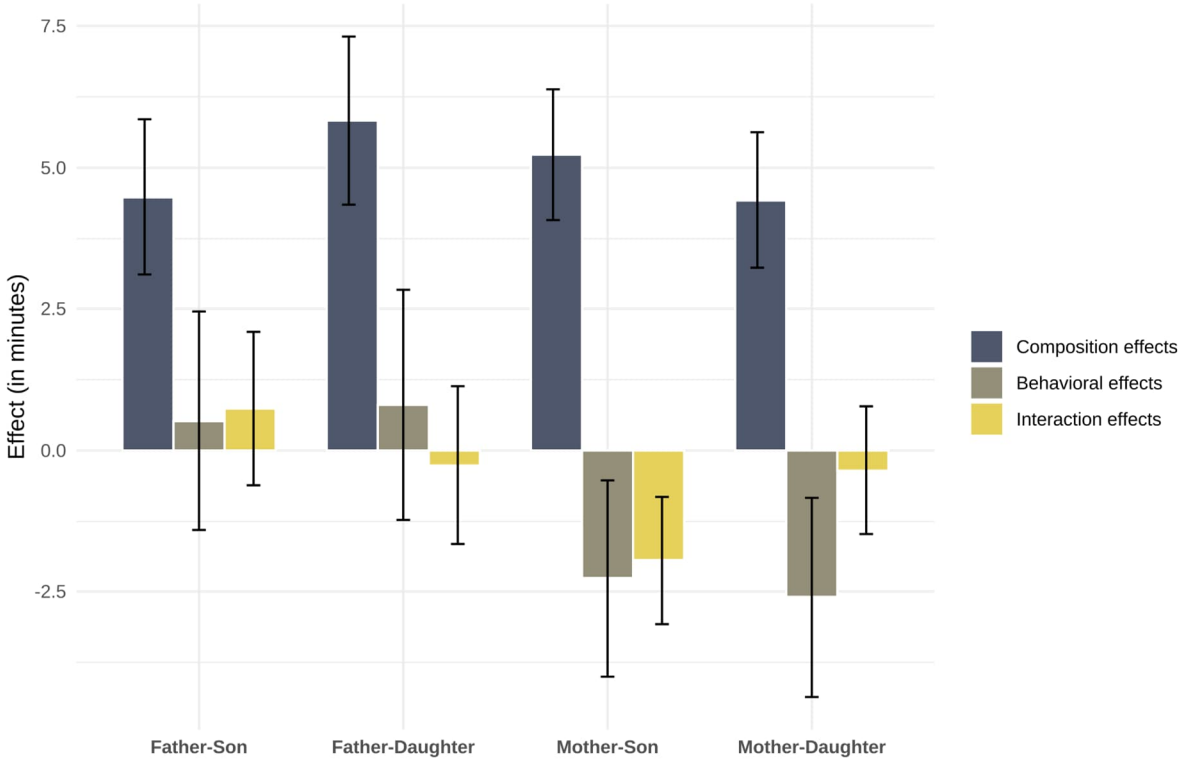


Figure S5. Overall results of the Oaxaca-Blinder decomposition of the change in older Finnish parents' distance to adult children (in kilometers) from 2003-2007 to 2013-2017, by gender of parent and nearest child: using geodesic distance