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Nearby children, longer lives? Evidence from the Finnish population register

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Highlights

- *Co-residence with adult children is uncommon in Finland, but most parents aged 60+ live within a 30-minute car journey to their nearest child.*
- *Co-residence is linked to lower mortality among spouseless fathers, while geographic proximity to non-coresident children is associated with lower mortality among both spouseless fathers and mothers.*
- *Living close to daughters is associated with lower mortality among spouseless mothers.*

Abstract

Geographic proximity facilitates contact and support between ageing parents and their adult children. While previous research has examined changes in living arrangements when parents age and become ill, little is known about how proximity to children itself is associated with their health and survival. This study examines how the distance between parents aged 60-85 and their adult children influences parents' mortality in Finland. Using novel multigenerational data from the Finnish population register, we estimate discrete-time survival models for the associations of co-residence and proximity to children with parental mortality. Co-residence with children is associated with substantially lower mortality risks only among spouseless fathers, while living close to non-coresident children is linked to lower mortality among spouseless mothers and fathers. Children's gender plays a limited role. However, close proximity to daughters is associated with lower mortality among spouseless mothers. Our findings suggest that living close to children matters for parents' longevity when there is no spouse to provide support.

Keywords: mortality, proximity, co-residence, ageing, intergenerational exchange, Finland

Introduction

Family and life course research has improved our understanding of parents' role in their children's development and well-being. As populations age, there is a growing attention to how adult children influence the health of their ageing parents. Recent scholarship has demonstrated that having children is associated with longevity—at least in high income settings and up to a certain number of children (Barclay et al., 2016; Barclay & Kolk, 2019; Högnäs et al., 2017; Jaffe et al., 2009; Modig et al., 2017). This finding is largely attributed to the selection of healthier individuals into parenthood. However, Barclay & Kolk (2019) argue that selection does not entirely explain parents' survival advantage. Social support theory suggests that adult children play an active role in their parents' health and survival through upward intergenerational transfers (Lee et al., 2017; Li & Guo, 2022), and through promoting healthier lifestyles and health-seeking behaviours (De León & McLaughlin, 2018; Liu et al., 2022; Ram et al., 2022).

One way to examine the social support theory is by studying the influence of geographic proximity to adult children on parents' health. Geographic proximity facilitates contact and transfers between parents and their children (Dewit et al., 1988; Mulder & Kooiman, 2024). Indeed, generations live closer in response to mutual support needs, such as when parents face health decline (Afable et al., 2025a; Choi et al., 2015; Reyes & Shang, 2024). Very few studies, however, have explored how geographic proximity to adult children influences older parents' health, wellbeing, and survival, and existing studies have mostly focused on the role of co-residence. The evidence is rather mixed: in Europe, co-residence with children is associated with higher levels of happiness and life satisfaction among widowed individuals (Grundy & Murphy, 2018), while in the United States, co-residence is linked to more severe depressive symptoms (Caputo, 2019). Co-residence, however, is only one aspect of the spatially linked lives of parents and their children. For example, nearby

children can represent a readily available source of support and promote better health in later life without the risk of losing one's sense of autonomy and privacy (Isengard & Szydlik, 2012; Van Der Pers et al., 2015a).

We investigate how co-residence with and geographic proximity to adult children are linked to the survival of parents aged 60+ in Finland. As one of Europe's most rapidly ageing societies, Finland is distinguished by a comprehensive welfare state that has long assumed primary responsibility for elder care. Adult children, nonetheless, continue to be an important pillar of informal support (Jolanki et al., 2013). A recent study using Finnish register data found that co-residence with children has declined in recent decades and older parents and adult children increasingly live further apart (Afable et al., 2025b). We explore the potential consequences of this geographic separation on the health of older parents.

We make several novel contributions. First, while past research has largely explored subjective wellbeing such as life satisfaction, loneliness, and happiness (Van Der Pers et al., 2015; Wei & Tsay, 2024), this is the first study to examine the role of proximity to adult children in parental mortality. As the ultimate outcome in the disablement process, mortality reflects the cumulative burden of diseases and conditions, functional loss, disadvantages, and unmet care over the life course (Saito et al., 2014). Examining the social determinants of later-life mortality is most consequential for population health; in many countries, most deaths occur in later life, and reducing these deaths drive major improvements in life expectancy at birth (Klenk et al., 2016; Vaupel, 1986).

Second, we draw attention to the presence of a spouse and the gender of *both* the parent and their children in explaining this relationship. Various studies suggest that children are especially critical for filling the support gap left by parents' divorce or widowhood (Ha & Carr, 2005; Steverink & Lindenberg, 2006; Van Der Pers et al., 2015), but we know little about the association between such support and the longevity of spouseless parents.

Meanwhile, although gender has long been examined as a critical dimension of parent-child relations (Kaufman & Uhlenberg, 1998; Rossi & Rossi, 1990), it has not been sufficiently examined in relation to parental health. On the one hand, several studies find that daughters provide more assistance to their parents, and children have greater emotional bonds with their mothers (Kaufman & Uhlenberg, 1998; Patsdaughter & Killien, 1990; Rossi & Rossi, 1990). On the other hand, sons live closer to and are more likely to co-reside with their parents (Chudnovskaya & Kolk, 2017; Shelton & Grundy, 2000; Szydlik, 2016). Therefore, we examine whether and how these gender dynamics moderate the relationship between children's geographic proximity and parental survival.

Third, past research conventionally used cross-sectional data (Van Der Pers et al., 2015b; Wei & Tsay, 2024; Zhou & Bai, 2022) and have not addressed the possible reverse causation between parental health and proximity to children. While not explicitly causal, our study design is less exposed to this bias given our use of longitudinal data and adjustment for parental health.

Parent-child relations and health

Social support models suggest that adult children have a largely positive impact on parents' health and wellbeing in later life. One study, for instance, finds that the number of children is associated with increased happiness among parents aged 40+ suggesting that having children is a 'long-term investment in happiness' (Margolis & Myrskylä, 2011). Beyond subjective wellbeing, support from adult children cushions the psychological and physiological toll of various shocks in later life. For instance, several studies find that ties to adult children can buffer against the psychological, physical, and survival impacts of widowhood (Do & Malhotra, 2012; Ha & Carr, 2005; Silverstein & Bengtson, 1991).

Aside from material and emotional support, adult children play a positive role in parents' adoption of healthier lifestyles and better health management. Studies among Chinese and Mexican older adults demonstrate that the negative link between children's education and parent's risk of chronic illness can be explained in part by better-educated children promoting healthy behavioural changes, such as more frequent physical activity and healthier diets (De León & McLaughlin, 2018; Liu et al., 2022), and in transmitting healthcare information to their parents (Liu et al., 2022). Another study among South Asian immigrants in the US finds that older parents are more likely to follow a healthier diet and routine when their adult children likewise do so, suggesting that children are positive role models for their ageing parents (Ram et al., 2022). Meanwhile, one study among Swedish parents finds that the link between children's SES and parental mortality is clearest for children's education, suggesting that behavioural changes and knowledge transfers possibly play a greater role in parental health than children's material resources (Torssander, 2014).

However, adult children's contribution to parental survival is not uniform nor universal across subpopulations. Spousal support and the gender dynamics between parents and their children are two critical dimensions that shape this relationship. According to the hierarchical compensatory model (Cantor, 1979), older adults draw support from their kin first—mainly spouse and children—followed by non-kin networks (e.g., friends and neighbours) and formal organizations. Carr & Khodyakov (2007) find support for this theory, showing that most married older adults prefer their spouses to make end-of-life decisions on their behalf when incapacitated, while unmarried parents—especially women—tend to count on their adult children. Additionally, the substitution mechanism drawn from the theory of social production functions holds that individuals optimise their wellbeing by drawing on alternative sources of support when preferred resources are unavailable (Steverink & Lindenberg, 2006). Indeed, Van Der Pers and colleagues (2015) found for the Netherlands

that adult children fill the gap left by the absence of a spouse, and their support is activated in times of need. Lending support to these two perspectives, empirical research has shown that support from children is associated with better health and survival, especially among spouseless parents (i.e., divorced or widowed) (Cui et al., 2021; Liu et al., 2020; Pinguart, 2003; Van Der Pers et al., 2015).

The link between parent-child ties and parental health is also likely gendered due to differences in socialisation and role expectations between fathers, mothers, sons, and daughters. Mothers commonly have a higher emotional investment in their children, especially their daughters, while sons may be more likely to identify with their fathers (Kaufman & Uhlenberg, 1998; Patsdaughter & Killien, 1990; Rossi & Rossi, 1990). Empirical research has explored these gender dynamics in relation to parental health. For instance, a higher number of sons is linked to higher mortality among mothers (Harrell et al., 2008; Van De Putte et al., 2004), while fathers are more immune to this effect likely due to care support from their wives (Harrell et al., 2008). In China, Cui et al. (2021) find causal evidence that daughters' education has a greater effect on parental survival than sons', indicating the changing role of increasingly educated daughters in society. In Sweden and the United States, studies indicate that as opposed to having a son, having a daughter is associated with greater survival among parents, especially among mothers—and this relationship holds regardless of children's education (Friedman & Mare, 2014; Torssander, 2013). In contrast, evidence from South Korea suggests that having only daughters is associated with higher mortality among mothers, but this is mediated by lower financial transfers from daughters (Kim, 2022).

Previous evidence

Much of the literature on the relationship between adult children's geographic availability and older parent's later-life conditions examine the effect of children's co-residence on parents' psychological and subjective wellbeing. These studies are motivated by the role of co-residence in old-age security—particularly in low-resource contexts—as well as recent concerns on increased co-residence of adult children in several countries (see Esteve & Reher, 2021). The evidence, however, has been mixed and highly contextual. On the one hand, several studies point to the positive effect of co-residence on levels of happiness and mental health, and this effect is especially pronounced among spouseless parents (Courtin & Avendano, 2016; Do & Malhotra, 2012; Grundy & Murphy, 2018; Ha & Carr, 2005; Lee & Kim, 2022). In Europe, Grundy and Murphy (2018) demonstrate that this finding is gendered: co-residence with daughters, but not with sons, is associated with greater happiness in Eastern and Southern Europe.

On the other hand, an increasing number of studies suggest a more pessimistic view of co-residence (Caputo, 2019; Johar & Maruyama, 2014; Liu et al., 2020; Maruyama, 2015; Tosi & Grundy, 2018). For instance, Caputo (2019) finds that recent co-residence with adult children is associated with increased depressive symptoms among parents in the United States. Similarly, Tosi and Grundy (2018) show that children returning home is associated with a decreased quality of life among European parents, particularly in the Nordic region, where co-residence rates are low. Both studies support the notion that co-residence represents a transgression of parents' autonomy and independence at a life stage when empty nests are the norm (Umberson et al., 2010). Aside from mental health, evidence from Indonesia and Japan—where co-residence rates are higher than in Europe—suggests that co-residence is associated with worse self-rated health and higher mortality, even after accounting for selection (Johar & Maruyama, 2014; Maruyama, 2015). As Maruyama (2015) argues, co-

residence may disincentivize parents from investing in their own health if it means adding to children's caregiving burden. Relatedly, Ha and Carr (2005) emphasise that the mental health-protective effect of co-residence following widowhood is suppressed when parents feel unduly dependent on their children.

Far fewer studies examine the role of geographic proximity to children in parent's health. Employing different definitions of distance, most of these studies suggest that living closer to children is beneficial to parents' health and wellbeing. In the Netherlands, Van Der Pers et al. (2015) measure distance between parents' and children's municipalities of residence and find that close proximity is associated with greater life satisfaction only among widowed and divorced mothers and among divorced fathers—indicating the substituting role of adult children when spousal support is absent. Similarly, Wei and Tsay (2024) find that living close to children (e.g., same village or county)—but not co-residence—is positively associated with life satisfaction in urban China. Conversely, geographic separation from children is associated with adverse health outcomes among parents. In separate studies in India and China, parents with migrant sons had a higher risk of chronic diseases than those without a migrant son, which in part may be explained by their lower healthcare access and utilisation compared to parents with nearby children (Evandrou et al., 2017; Falkingham et al., 2017).

And yet, it is critical to recognise the role of selection in interpreting these associations. Previous studies indicate that co-residence increases and parents and children live closer together in response to parental health decline, especially in the more advanced ages (Afable et al., 2025a; Choi et al., 2015; Reyes & Shang, 2024). Not accounting for this selection risks producing a spurious positive association between co-residence/close proximity to children and higher mortality. Additionally, children's proximity may be endogenous to parental health (Torssander, 2013). For example, parents' SES influences not

only their own health in later life (Elo et al., 2014), but also their children's trajectories in adulthood, including their education and how far away they live (MacIsaac et al., 2025)—meaning that any association between adult children's proximity and parental mortality partly reflects shared characteristics earlier in life.

Expectations

Considering these perspectives and empirical findings, we hypothesise, first, that living closer to adult children is associated with lower mortality risk among older parents. However, we expect that co-residence with children would have a negative association with parental survival in Finland, where co-residence is rare and possibly represent a transgression of autonomy and independence in later life. Second, we hypothesise that close geographic proximity is associated with higher survival to a greater extent for spouseless parents than for those with a spouse, given that adult children serve as the next best available kin after a spouse. Finally, we hypothesise that the mediating role of spousal presence varies across the gender of the parent and the child. We expect that the influence of geographic proximity is greater for spouseless mothers than spouseless fathers, given mothers' greater emotional investment in their children. Additionally, because daughters typically provide greater care support to their parents, we expect that daughters' geographic proximity has a stronger positive association with the longevity of spouseless parents than that of sons'.

Data and methods

Data and variables

We use high-quality data from the Finnish population register maintained by Statistics Finland. This database spans several decades of pseudonymized information for every

individual residing in Finland, including their individual and household characteristics, year of death, and residential location at the level of four-digit postal codes. The database also allows the linking of children to their parents through personal identification codes, with high linking coverage for parents born 1938 onwards (Einiö et al. 2016). We take a 15% random sample of Finnish parents aged 60+ who were born from 1938 onwards and link them to their biological or adopted children aged 18+. We exclude 3,118 parents who had missing information on household ID and distance to children. The final sample consists of 216,850 parents¹ (2,486,168 person-years) aged 60-85 from 1998 to 2023 (Figure S1 illustrates the sample derivation).

Our outcome of interest is all-cause mortality. We follow parents annually from age 60 either until 1) December 31st, 2023, the end of our observation period, 2) they move abroad, or 3) death. A value of 1 is assigned if the individual dies in a given year, while a value of 0 is assigned if the individual remains alive or is lost to follow-up. We record 34,497 deaths during the observation period.

We are interested in two key predictors: a) co-residence with a child, and b) proximity to the nearest non-co-resident child. Co-residence is based on whether the parent and any of their children share the same ID for their household-dwelling unit. Thus, if multiple households or families share the same dwelling, they are considered co-resident. Meanwhile, we define proximity to the nearest, non-co-resident child by measuring the minimum distance between the parent and their non-co-resident children. In this analysis, we exclude 194,319 cases where parents have a co-resident child, to better disentangle the different influences of co-residence and having nearby children. We calculate distances by taking the shortest travel time by car (in minutes) between the centroids of parents and children's postcodes using the

¹ Analyses are stratified by gender to avoid double counting as 21,474 parents share the same household indicating that they are most likely couples.

osrm package in R, which uses community-contributed navigation routes from OpenStreetMap (Giraud et al., 2024). To account for potential non-linear associations between distance and mortality, we further group distance to the nearest, non-co-resident child into three categories: 1) living in the same postcode, 2) living in a different postcode but within 30 minutes, and 3) living more than 30 minutes away. We perform sensitivity checks around these analytic decisions, including the exclusion of parents with a co-resident child, the choice of distance cutoffs, and the differences in postcode sizes between urban and rural areas.

We also study how the associations between co-residence/geographic proximity and parental mortality are modified by the presence of a spouse and children's gender composition. A parent has a spouse if they are married or in a registered partnership, while those who are never-married, divorced or widowed are considered spouseless. Following past research (Grundy & Murphy, 2018; Kim, 2022; Van Der Pers et al., 2015), we define children's gender composition as having 1) exclusively sons, 2) exclusively daughters, and 3) both sons and daughters.

We control for parents' and children's characteristics that potentially confound the relationship between co-residence/proximity and parental mortality. These covariates include the parent's education (basic, upper-secondary, college), and time-varying covariates such as region of residence (West Finland and Åland, Helsinki-Uusimaa, South Finland, and North & East Finland), place of residence (urban/rural), and whether the parent moved in the past year. Additionally, we control for children's collective characteristics, including their median age, whether anyone is college-educated, whether anyone is divorced or unemployed in a given year, and the number of grandchildren.

Statistical analysis

We examine the association between co-residence and parental mortality, as well as proximity to a non-coresident child and parental mortality. We use discrete-time survival models, specified as a logistic model:

$$\text{logit}[q_x] = \alpha(x) + \gamma G_x + \mathbf{X}\boldsymbol{\beta}$$

where q_x is the probability of death at age interval x to $x+1$, $\alpha(x)$ is the baseline hazard, which is a quadratic function of age, γ is the coefficient for co-residence or proximity variable G_x , while $\boldsymbol{\beta}$ is the vector of coefficients for covariates \mathbf{X} .

To test our first hypothesis, we estimate separate models examining the influence of co-residence and proximity to the nearest, non-coresident child on parental mortality (Model 1a and 1b). These models are stratified by parental gender to address potential double counting for parents with a spouse. To test our second hypothesis, we introduce an interaction between co-residence/proximity and the presence of a spouse (Model 2a and 2b). Finally, to test our third hypothesis, we include three-way interactions between proximity/co-residence, presence of spouse, and the gender composition of children (Model 3a and 3b).

We present average marginal effects (AME), which allow for a direct comparison of the coefficients within and between models, which is especially useful when interpreting interaction effects (Mize, 2019). We compute the AMEs by taking the average difference between the marginal (population-averaged) predicted probabilities for each individual, calculated as if everyone had a child living in the same postcode vs if everyone had a child living within a 30-minute car journey, while holding other covariates at their observed values. The AMEs can be interpreted as the average change in the probability of death when, for example, the parent lives within a 30-minute car journey to the nearest child versus if the parent lives in the same postcode as any child.

To contextualise the magnitude of these associations, we also estimate the change in partial life expectancy between ages 60 to 85, which gives an indication of the additional years of life associated with co-residence or a change in distance to adult children. Using a period life table (Preston et al., 2001), we use the adjusted age-specific death probabilities estimated from Models 1a-1b and Models 2a-2b to calculate partial life expectancies by parental gender and presence of spouse.²

Results

Descriptive statistics

Table 1 shows the baseline characteristics of our analysis sample. At age 60, most parents have a spouse, but the percentage is higher among fathers (72%) than mothers (64%). Less than a third of parents are college-educated; the majority (over 80%) are homeowners, and around two-thirds live in urban areas. Parents are evenly distributed across Finland's regions, have an average of two children, and about a quarter only has sons (27%) and another quarter only has daughters (25%), while close to half has both at least one son and one daughter (49%). Children's median age is 31 for fathers and 33 for mothers. Parents have an average of one grandchild. Additionally, only 47% of fathers and 48% of mothers have any college-educated child, while around one in 10 has a child who experienced divorce or who is unemployed.

² These predicted probabilities are taken at the mean levels of the covariates of the full sample in order to remove the compositional differences between groups, e.g., those with and without a co-resident child.

Table 1. Characteristics of Finnish parents at age 60

| | Male | | Female | |
|------------------------------|--------------|----------------|--------------|----------------|
| | % | N | % | N |
| Presence of spouse | | | | |
| Yes | 72.2 | 74,216 | 64.0 | 73,034 |
| No | 27.8 | 28,522 | 36.0 | 41,078 |
| Cohort | | | | |
| 1938-1944 | 23.2 | 23,852 | 22.8 | 26,039 |
| 1945-1949 | 23.8 | 24,483 | 23.4 | 26,729 |
| 1950-1954 | 21.6 | 22,205 | 21.5 | 24,563 |
| 1955-1959 | 19.9 | 20,414 | 20.4 | 23,232 |
| 1960-1963 | 11.5 | 11,784 | 11.9 | 13,549 |
| Education | | | | |
| Basic | 31.4 | 32,225 | 30.2 | 34,507 |
| Secondary | 37.9 | 38,905 | 38.7 | 44,139 |
| Tertiary | 30.8 | 31,608 | 31.1 | 35,466 |
| Homeowner | | | | |
| Yes | 81.7 | 83,950 | 80.0 | 91,273 |
| No | 18.3 | 18,788 | 20.0 | 22,839 |
| Place of residence | | | | |
| Urban | 63.6 | 65,367 | 66.0 | 75,289 |
| Rural | 36.4 | 37,371 | 34.0 | 38,823 |
| Region of residence | | | | |
| West Finland and Aland | 26.4 | 27,057 | 26.1 | 29,824 |
| Helsinki-Uusimaa | 24.9 | 25,604 | 25.8 | 29,442 |
| South Finland | 22.9 | 23,512 | 22.9 | 26,151 |
| North & East Finland | 25.9 | 26,565 | 25.1 | 28,695 |
| Median number of children | 2.3 ± 1.2 | | 2.3 ± 1.2 | |
| Median age of children | 30.5 ± 4.8 | | 32.7 ± 4.8 | |
| Mean number of grandchildren | 1.3 ± 1.1 | | 1.4 +/- 1.1 | |
| Children's gender | | | | |
| All sons | 27.0 | 27,614 | 26.8 | 30,467 |
| All daughters | 24.5 | 25,087 | 24.6 | 27,952 |
| Both sons and daughters | 48.5 | 49,658 | 48.7 | 55,356 |
| Any college-educated child | 46.5 | 47,801 | 47.9 | 54,612 |
| Any child divorced | 10.3 | 10,543 | 13.4 | 15,343 |
| Any child unemployed | 12.4 | 12,740 | 11.7 | 13,343 |
| Total | 100.0 | 102,738 | 100.0 | 114,112 |

Source: Authors' calculation based on a 15% random sample of parents born in 1938-1963 from the Finnish population register.

We also describe the age patterns of co-residence with children and median distance to children by parents' spousal status (Figure 1). First, before age 70, a larger share of fathers

who have a spouse co-resides with a child than mothers. Second, co-residence with children is relatively uncommon: among parents with a spouse, 21% of fathers and 17% of mothers live with a child at age 60, and this share rapidly decreases around retirement ages—sharply declining to around 6% at ages 75+. For spouseless parents, co-residence is even less common, and the share of those co-residing with a child changes less over age compared to parents with a spouse. Finally, at older ages (75+), the difference across spousal statuses disappears for fathers and even reverses for mothers.

Regarding the distance to non-coresident children, most parents live within a 30-minute car journey to their nearest child, and the distance slightly declines with age. Interestingly, spouseless fathers live around five minutes farther away from children than those with a spouse, while there is no such difference across spousal statuses among mothers. For spouseless fathers, this distance dramatically declines with age—even approaching the median distance of fathers who have a spouse. Nonetheless, the share of parents living in the same postcode as any child make up a quarter of parents at age 60, and it gradually increases with age (Supplementary Figure S2).

Figure 2 presents the age-specific mortality risks among fathers and mothers by presence of spouse and co-residence with children. As expected, fathers have higher mortality than mothers: at age 75, for example, fathers have a .032 probability of dying annually, almost twice as high as for mothers ($q_{75} = .018$) (Figure 2 panel a). For both genders, the risk of dying progressively increases with age, and spouseless parents have significantly higher mortality risks. The difference is larger among fathers (around a percentage point) than among mothers. There is no significant difference across co-residential statuses, although spouseless fathers who are living with a child have marginally lower mortality rates than those without a co-resident child, at least in the younger ages.

Co-residence and mortality

Figure 3a shows the association between co-residence with children and parental mortality. Overall, co-residence is only associated with fathers' survival, and this association grows stronger with age. Among fathers, co-residence is associated with 0.05 and 0.33 percentage point lower annual mortality rate at age 60 and 84, respectively.

Figure 3b shows that this association is entirely driven by the lower mortality risk among spouseless fathers with a co-resident child (AME = -0.3 percentage points). Put in context, co-residence is associated with a 0.5-year increase in partial life expectancy between ages 60-85 among spouseless fathers, which is considerable given the 2.6-year gap in the partial life expectancy between fathers with and without a spouse (Table 2). Meanwhile, there is no association between co-residence with a child and mothers' mortality risk.

Next, we explore whether children's gender modifies the negative association between co-residence and mortality among spouseless fathers (Figure 3c) but find no such association.

Table 2. Changes in partial life expectancy (PLE) at ages 60-85 associated with co-residence with and proximity to adult children

| Gender | Presence of spouse | PLE (years) | Change in PLE associated with co-residence | Change in PLE associated with proximity to non-coresident children (reference: > 30 mins) | |
|---------|--------------------|-------------|--|---|-------------------------------|
| | | | | Living in the same postcode | Beyond postcode and < 30 mins |
| Fathers | With a spouse | 19.7 | -0.02 | -0.05 | -0.08 |
| | Without a spouse | 17.1 | 0.46 | 0.31 | 0.06 |
| Mothers | With a spouse | 21.1 | 0.06 | 0.07 | -0.03 |
| | Without a spouse | 20.2 | 0.05 | 0.30 | 0.11 |

Source: Authors' calculation based on a 15% random sample of parents aged 60-85 born in 1938-1963 from the Finnish population register.

Proximity to non-coresident children and mortality

We also investigate the association between geographical proximity to non-coresident children and parental mortality. Overall, living within the same postcode as any child is associated with lower mortality for both fathers and mothers, but there is no significant difference between living within 30 minutes and living more than half an hour away from children (Figure 4a). At age 84, not living in the same postcode as any child is associated with a 0.4 percentage-point increase in fathers' and mothers' risk of dying compared to living more than 30 minutes away from children.

The presence of a spouse modifies the association between proximity to non-coresident children and parental mortality (Figure 4b). Living more than 30 minutes away from children is associated with an increase in spouseless fathers' and spouseless mothers' risk of dying by .2 percentage points. These associations are modest; they correspond to around 0.4 years of additional life, and the difference between genders is marginal (Table 2). However, the association for spouseless mothers is substantial when viewed against the 0.9-year gap in partial life expectancy between women with and without a spouse. Meanwhile, the association is insignificant among parents with a spouse.

Children's gender composition modifies the association between proximity and mortality only among spouseless mothers (Figure 4c). Compared to spouseless mothers living more than 30 minutes away from children, living within the same postcode as any child is associated with lower mortality among those with only daughters (AME = .3 percentage points) and with only sons to a lesser extent (AME = .2 percentage points).

Supplementary analyses

We evaluate the robustness of our findings under different specifications, first, we test whether our results are sensitive to the choice of distance cutoffs. Using more refined categories of distance (a) within the same postcode; b) 0-15 minutes; c) 15-30 minutes; d) 30-60 minutes, and e) 1+ hour away) leads to results consistent with the results shown in the paper (Supplementary Figure S3).

Second, living farther away from children might also reflect rural inaccessibility of health services, thus confounding the association between geographic proximity to children and parental mortality. To further address this, re-estimated the models using a sample of parents living in urban areas, where postcodes are smaller and parents live closer to health services. We continue to find a significant association between children's proximity and parental mortality in these areas. The association, in fact, appears to be stronger for mothers when the sample is limited to urban areas (Supplementary Figure S4).

Third, we examine the implications of proximity for parents who also have a co-resident child ($N = 159,931$), whom we have excluded in our models for proximity. Using this sample of parents, we re-estimate our model interacting proximity to non-coresident child with presence of spouse. True to our expectation, proximity to other, non-coresident children has no significant association with mortality when parents, regardless of spousal status, already have a child living with them (Supplementary Figure S5).

Finally, having both a son and a daughter means higher parity, which is associated with lower mortality (Barclay & Kolk, 2019; Jaffe et al., 2009). To better isolate the moderating role of children's gender, we estimate Model 3a and 3b using a sample of parents with one child. Consistent with our main results, children's gender does not significantly

moderate the relationship between children's proximity and parental mortality (Supplementary Figures S6-7).

Discussion

We examined the association between geographic proximity to adult children and mortality among older parents, contributing to the discussion on the role of family ties in older adults' health and survival. Leveraging rich population data from Finland's administrative registers, we follow 216,850 parents aged 60+ from 1998 to 2023 or until their death. We further distinguish between co-residence and distance to the nearest non-coresident child, which are qualitatively different forms of living arrangements. We also jointly examined how these measures' associations with mortality vary with the presence of a spouse and children's gender composition—two critical dimensions of family ties in later life.

Our results suggest that co-residence and geographic proximity to a non-coresident child are linked to parents' survival. Against our expectation that co-residence would have a negative association with parental survival, we find that co-residence has a substantial and positive association with survival only among spouseless fathers: co-residence with children is associated with a 0.4-year increase in spouseless fathers' partial life expectancy at ages 60-85. This finding supports past research showing that co-residence with children is beneficial to parents' health and wellbeing, especially following the loss of spousal support (Courtin & Avendano, 2016; Do & Malhotra, 2012; Grundy & Murphy, 2018; Ha & Carr, 2005; Lee & Kim, 2022).

Context is crucial in understanding how co-residence with children shapes parents' health outcomes. Studies that have found a negative effect of co-residence on parental health in Europe and the US were specifically concerned with children's *boomerang moves* as a

stressor to their formerly empty-nested parents (Caputo, 2019; Tosi & Grundy, 2018). In fact, the study by Caputo (2019) shows that this negative effect is not present when looking at children co-residing for a longer period. Although co-residence with children comes at the risk of diminishing one's privacy and independence, it also presents opportunity for close contact with and support from adult children—especially when support from a spouse is absent.

Indeed, recent research shows that the presence of children reduces the negative effect of being unpartnered on survival (Quashie et al., 2026). We demonstrate that children's co-residence and close geographic proximity is among the possible explanations for such an association, in line with past research (Van Der Pers et al., 2015; Wei & Tsay, 2024). This moderating role of spousal presence supports the substitution mechanism under the theory of social production functions: spouses are the first port of call for older adults, but when this support is absent, adult children—especially those who are nearby—become an indispensable resource (Steverink & Lindenberg, 2006; Van Der Pers et al., 2015).

Contrary to our expectation that the influence of co-residence and geographic proximity would be stronger for mothers, we find no substantial gender difference in the link between proximity and mortality, while co-residence is only associated with the survival of spouseless fathers, who live farther from—and are less likely to co-reside with—their children than other groups of parents. Because older men have more limited social networks than women (Schwartz & Litwin, 2018), co-residence with children represents an important adaptive strategy for fathers when spousal support is absent. For spouseless mothers, meanwhile, our analysis suggests that they may benefit from close proximity to children without the need for co-residence. In fact, our results indicate that spouseless mothers' living in the same postcode as any child may help reduce as much as a third of the gap in partial life expectancy across spousal statuses among women.

That there is no association between proximity and survival among mothers who have a spouse—contrary to our expectation—may be related not only to the availability of spousal support but also to the diversity of their social networks (Van Der Pers et al., 2015). Additionally, we cannot rule that such association may be present for women beyond age 85, where support from proximate children may matter more for parents' survival.

Children's gender plays a limited role in these relationships. The close lifelong connection between mothers and daughters is well-established in the literature: they have greater affectionate ties and more frequent interactions than other parent-child pairs (Rossi & Rossi, 1990; Szydlik, 2016). We demonstrate that this bond, as expressed in geographic proximity, has a positive association with spouseless mothers' survival. In any case, while studies find that daughters provide more frequent and intense support than sons, our results suggest that the geographic accessibility of children, regardless of their gender, may be what matters for parental survival. Additionally, this gender divide in informal caregiving may not be as prominent in Nordic contexts like Finland, where the formal system largely provides intensive care, and where informal caregiving norms are more gender-egalitarian than in other countries (Korhonen et al., 2026).

Finally, we also underscore that it is *very close* proximity to children—that is, co-residence and living in the same postcode—that appears to be more advantageous to parents. We can only speculate as to the nature of the exchange facilitated by this close proximity. Living very close to children is associated with more frequent contact and receiving more hours of assistance, especially in the face of disability (Choi et al., 2015; Schoeni et al., 2022). However, this does not straightforwardly apply to the Finnish context, where adult children's caregiving support is more limited when parents face severe disability, such as dementia (Korhonen et al., 2026).

We acknowledge our study's limitations and the possible avenues it opens for future research. First, our models might not fully capture selection effects. Some individuals—such as those in poor health—tend to die earlier, and they are also likely to co-reside with or live closer to their children. We have sought to address this by including a variable to measure residential mobility in the previous year. Still, we cannot discount other unobserved sources of heterogeneity. For instance, it is possible that parents' early life conditions, such as a substance use disorder, may influence both their mortality risk and their proximity to children in later life.

Second, our use of administrative data does not allow us to infer the nature of close proximity to children and its relationship with intergenerational transfers and other mechanisms that link children's geographic proximity and parental health. The gerontological literature has long acknowledged that not all social ties are positive. Indeed, some of these ties can be more ambivalent and harmful to older parents' as well as children's wellbeing (Fingerman et al., 2008). Third, we examine all-cause mortality, but future research should explore the role of adult children in potentially reducing specific causes of death, especially from conditions shaped by modifiable lifestyle factors or medical treatment. Lastly, if geographic proximity is a conduit for parent-child ties, it would be interesting to examine how, if at all, it mediates the relationship between children's characteristics—including education—and parental health.

In summary, this study supports the idea that selection may not alone explain parents' longevity advantage as compared to childless parents. We show that children's geographic proximity—an important indicator of the availability of informal support—is among the potential social mechanisms underlying this phenomenon. However, the association between proximity and parental survival is modest, suggesting that other support mechanisms may explain why parents live longer than non-parents. It seems that spouse remains the more

consequential source of support in later life than children, though our results also show that nearby children can attenuate the adverse health impact of spousal absence on parental survival. We specifically demonstrate that co-residence with children—although rare in Finland—may help close the survival gap between men with and without a spouse, while living very close to children may help reduce the survival gap across spousal statuses among women. Overall, the presence of children in the parent’s vicinity not only provides greater opportunities for intergenerational exchanges but also shapes parents’ survival in later life. This finding draws attention to the mortality disadvantage faced by parents who lack nearby kin. As geographic separation between generations increases and rates of childlessness continue to grow, how to best support these older adults will be an important question for both research and policy in the years to come.

Data availability

The data underlying this article cannot be shared publicly due to strict regulations governing the use of the Finnish administrative registers. Statistics Finland Board of Ethics (permit TK/1529/07.03.00/2025) approves the license to use the Finnish population register.

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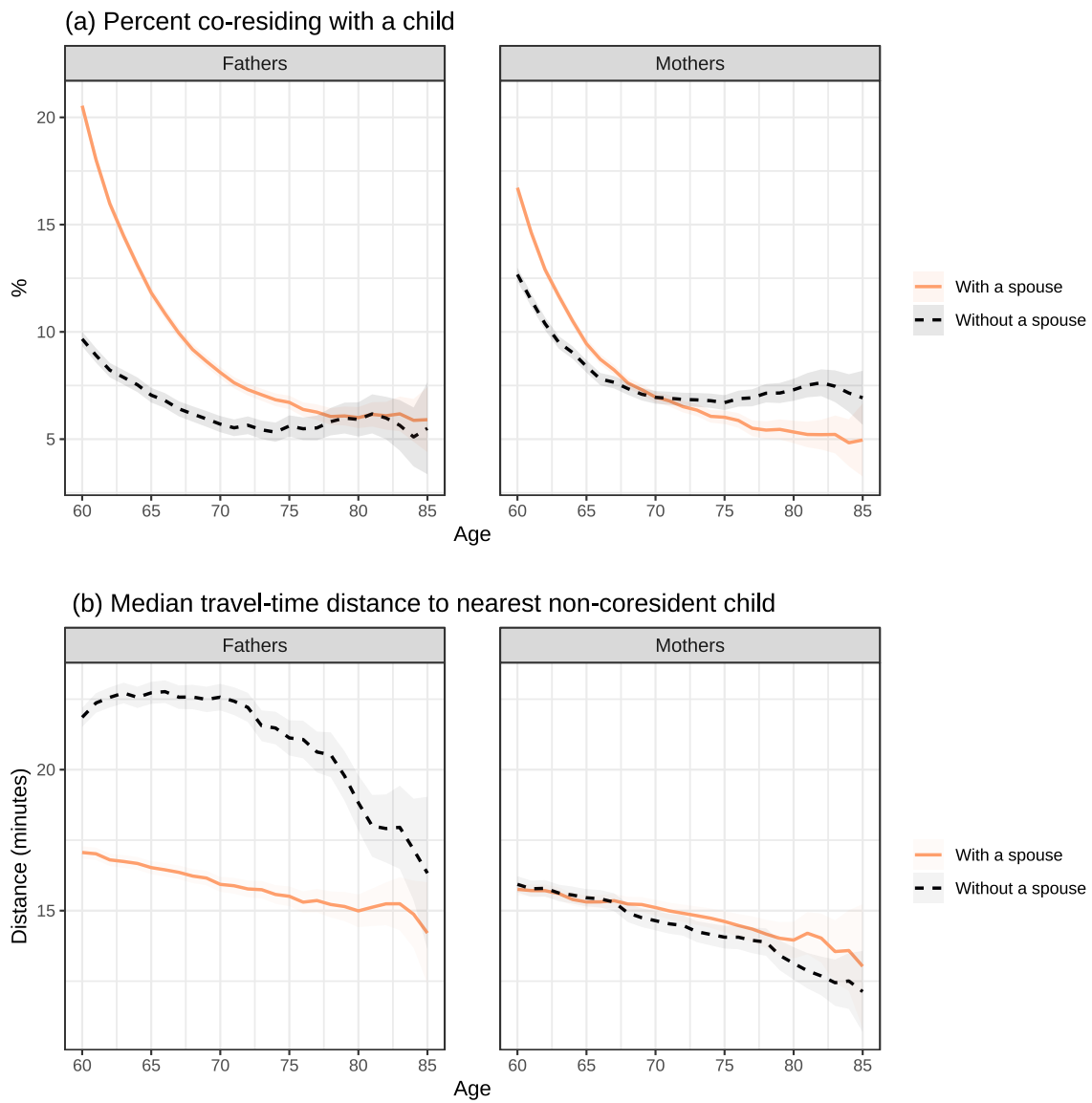
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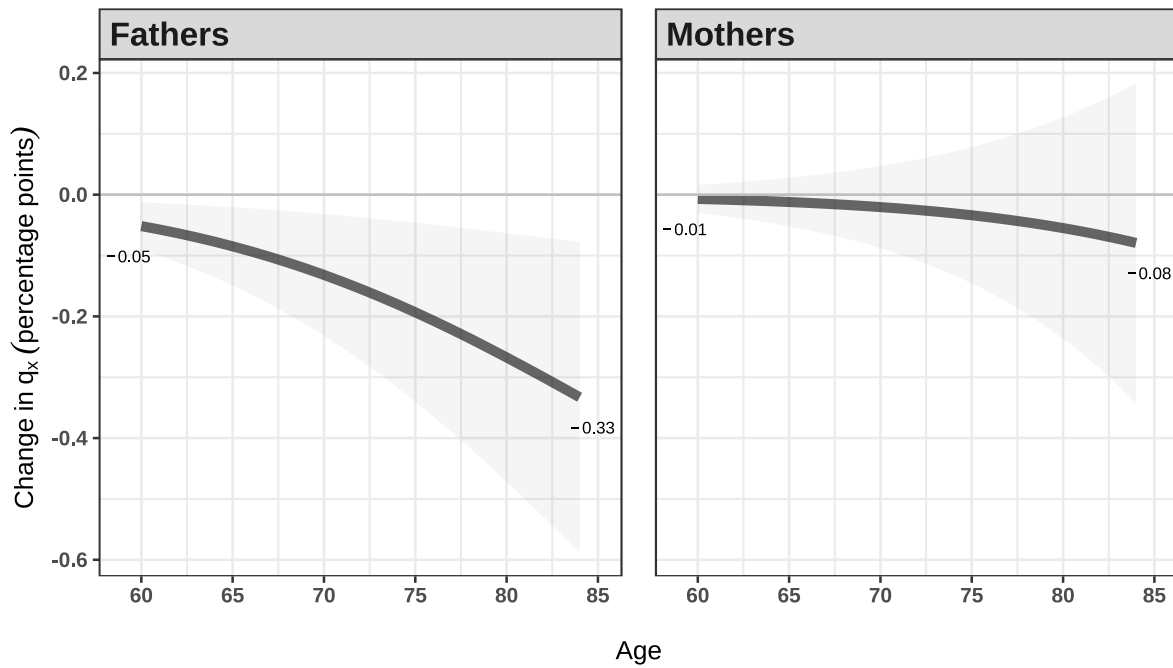
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Figure 1. Age patterns of co-residence with children and distance to nearest non-coresident child, by presence of spouse



Source: Authors' calculation using Finnish register data (1998-2023). Shaded areas represent 95% confidence intervals.

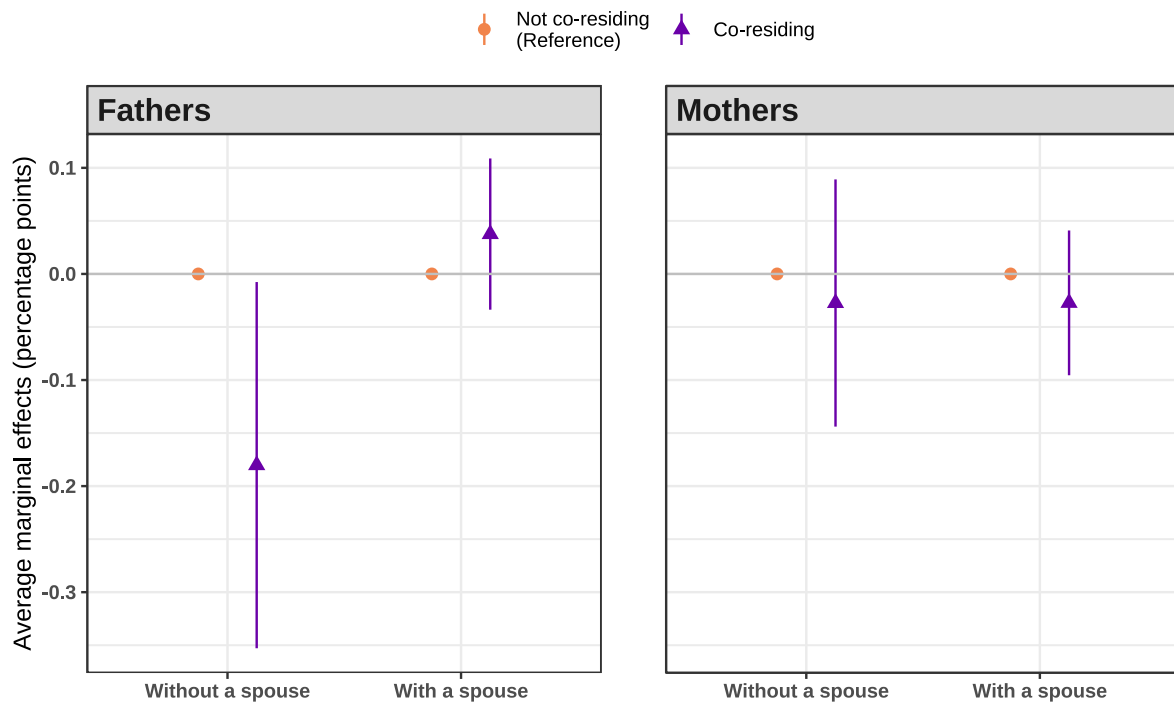
Figure 3a. Average marginal effects of co-residence with children on parental mortality



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, controlling for parent's education, birth cohort, urbanicity and region of residence, homeownership, residential mobility, number of children, number of grandchildren, median age of children, whether any child is college-educated, whether any child experienced divorce, and whether any child was unemployed in the past year. Shaded area represents 95% confidence interval.

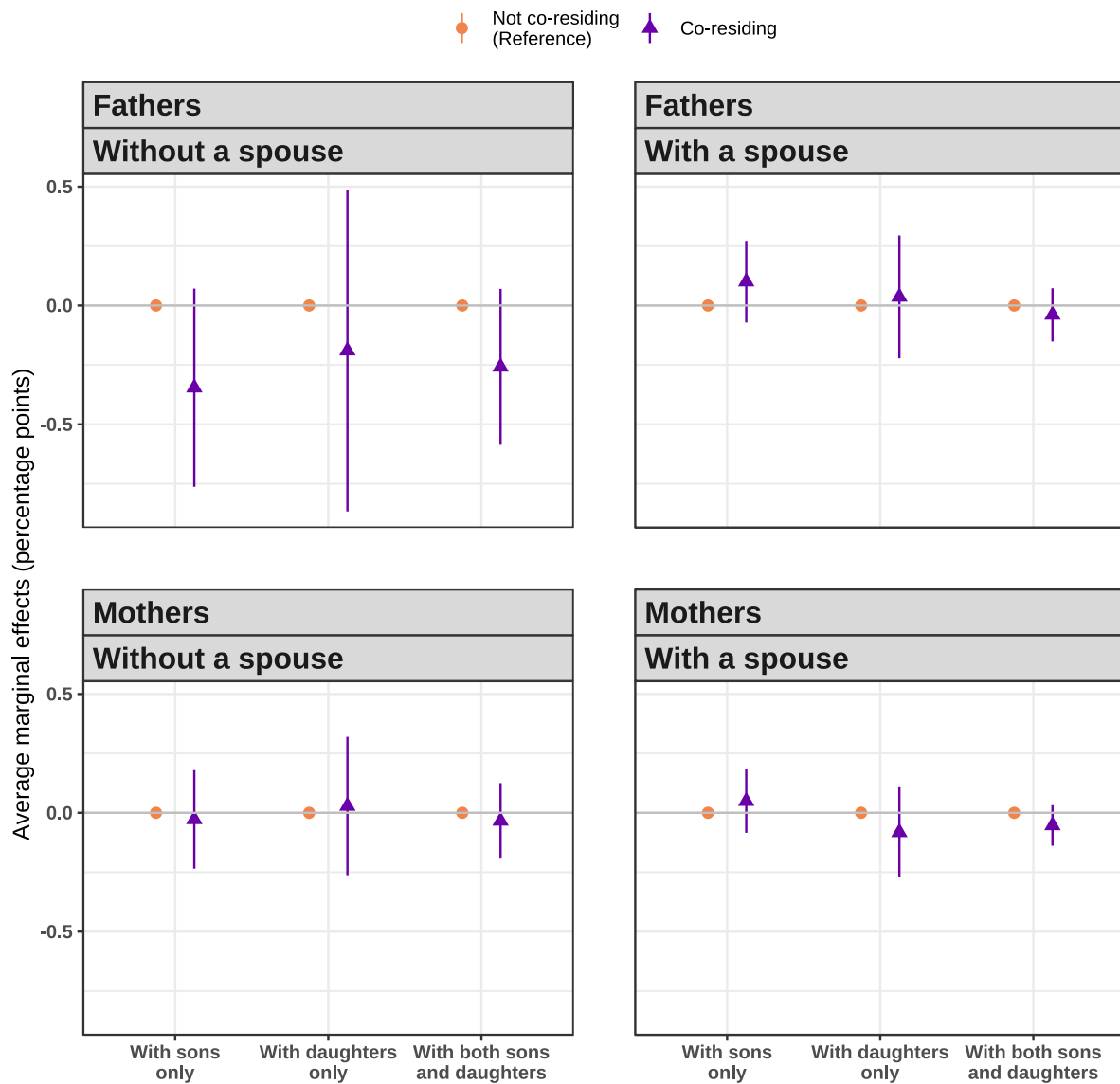
Figure 3b. Two-way interaction of co-residence with children and presence of spouse on parental mortality



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting co-residence with presence of spouse, and controlling for parents and children's characteristics. Bars represent 95% confidence interval.

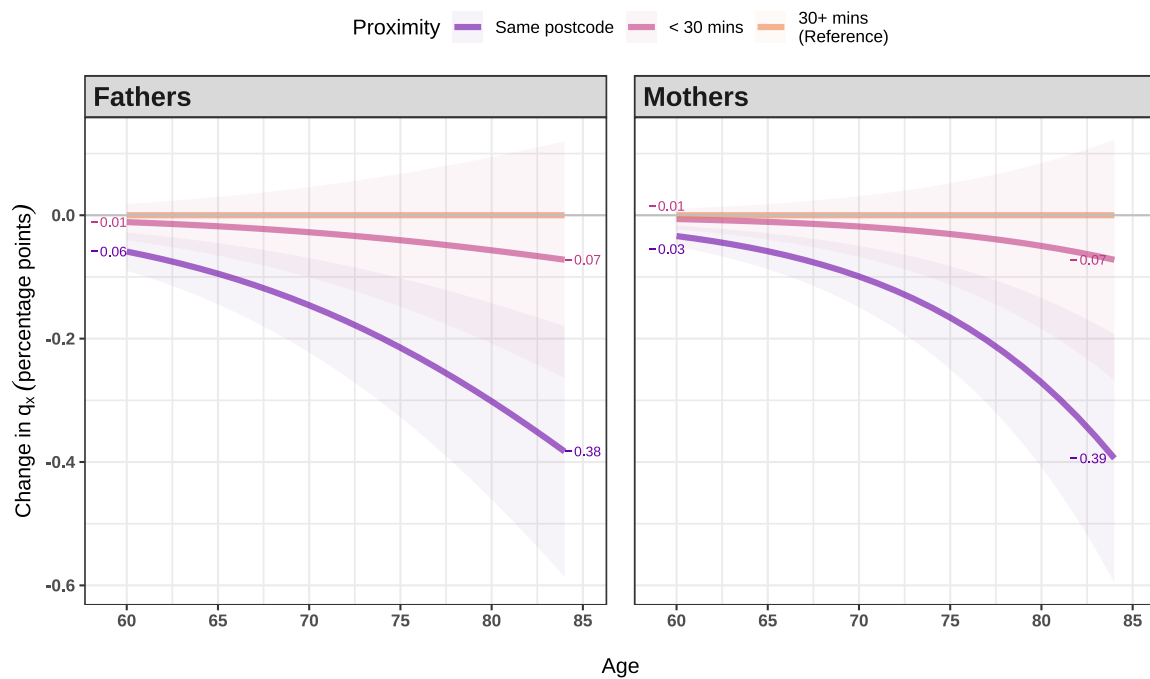
Figure 3c. Three-way interaction of co-residence with children, presence of spouse, and children’s gender composition on parental mortality



Source: Authors’ calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting co-residence with presence of spouse and children’s gender composition, and controlling for parents and children’s characteristics. Bars represent 95% confidence interval.

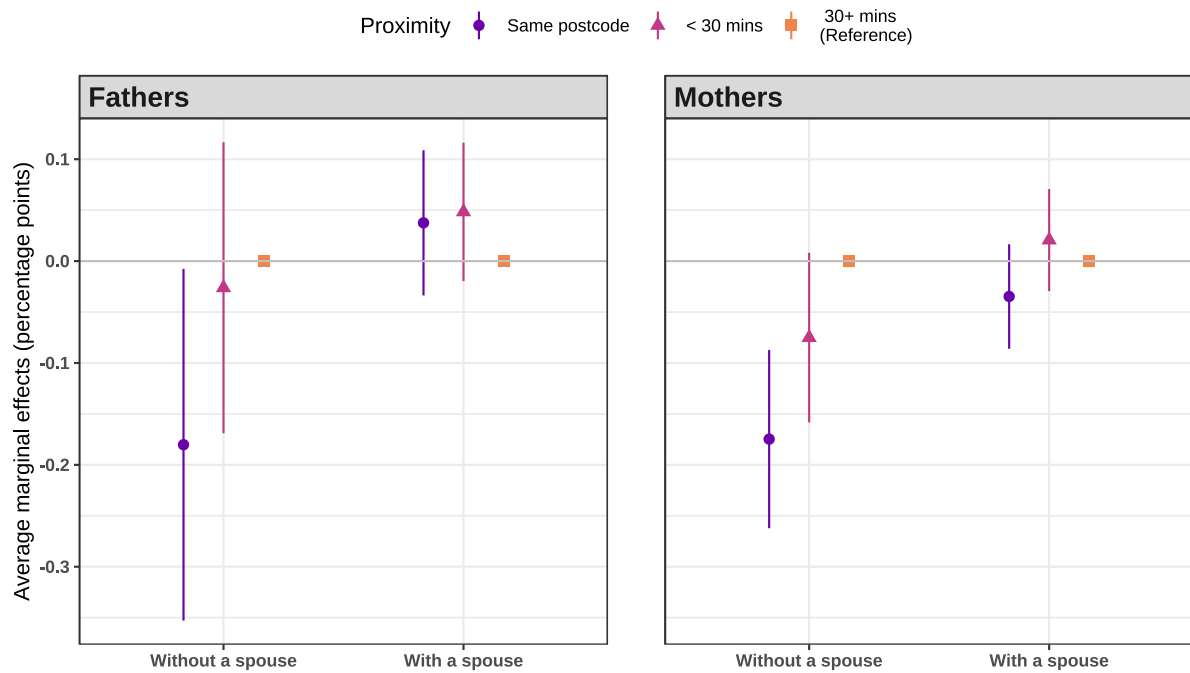
Figure 4a. Average marginal effects of proximity to the nearest, non-coresident child on parental mortality



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, controlling for parent's education, birth cohort, urbanity and region of residence, homeownership, residential mobility, number of children, number of grandchildren, median age of children, whether any child is college-educated, whether any child experienced divorce, and whether any child was unemployed in the past year. Shaded area represents 95% confidence interval.

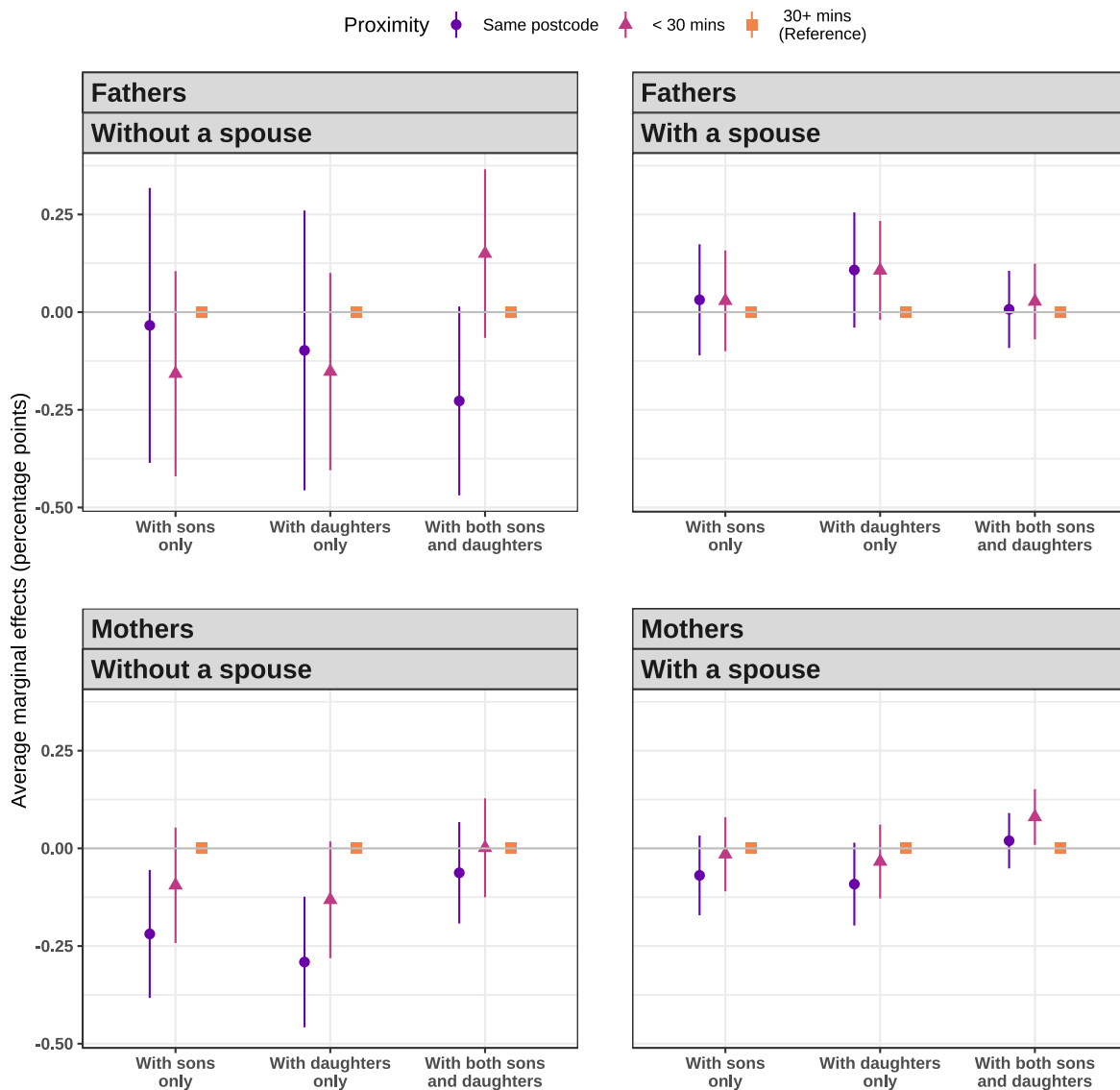
Figure 4b. Two-way interaction of proximity to the nearest non-coresident child and presence of spouse on parental mortality



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting proximity to nearest non-coresident child with presence of spouse, and controlling for parents and children's characteristics. Bars represent 95% confidence interval.

Figure 4c. Three-way interaction of proximity to the nearest non-coresident child, presence of spouse, and children’s gender on parental mortality



Source: Authors’ calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting proximity to nearest non-coresident child with presence of spouse and gender composition of children, and controlling for parents and children’s characteristics. Bars represent 95% confidence interval.

Supplementary materials

Figure S1. Lexis diagram illustrating the derivation of the analytical sample

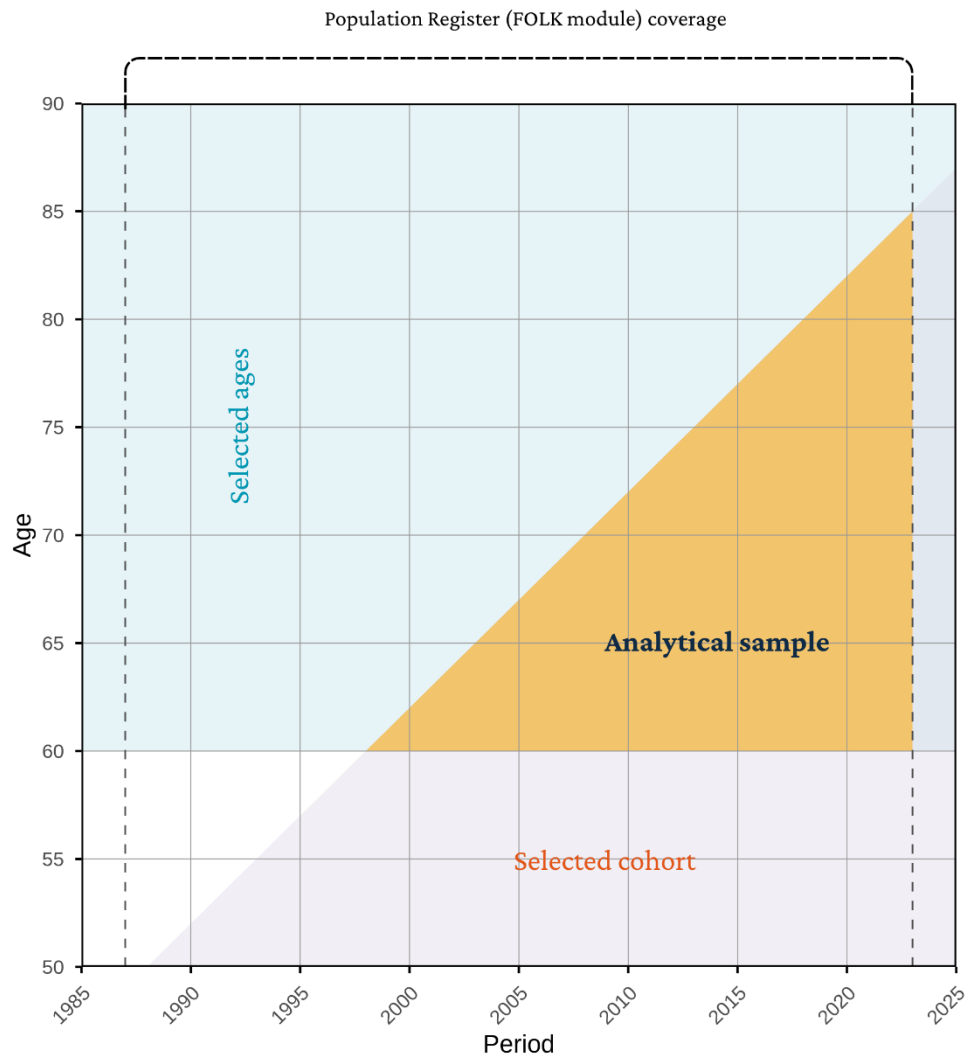
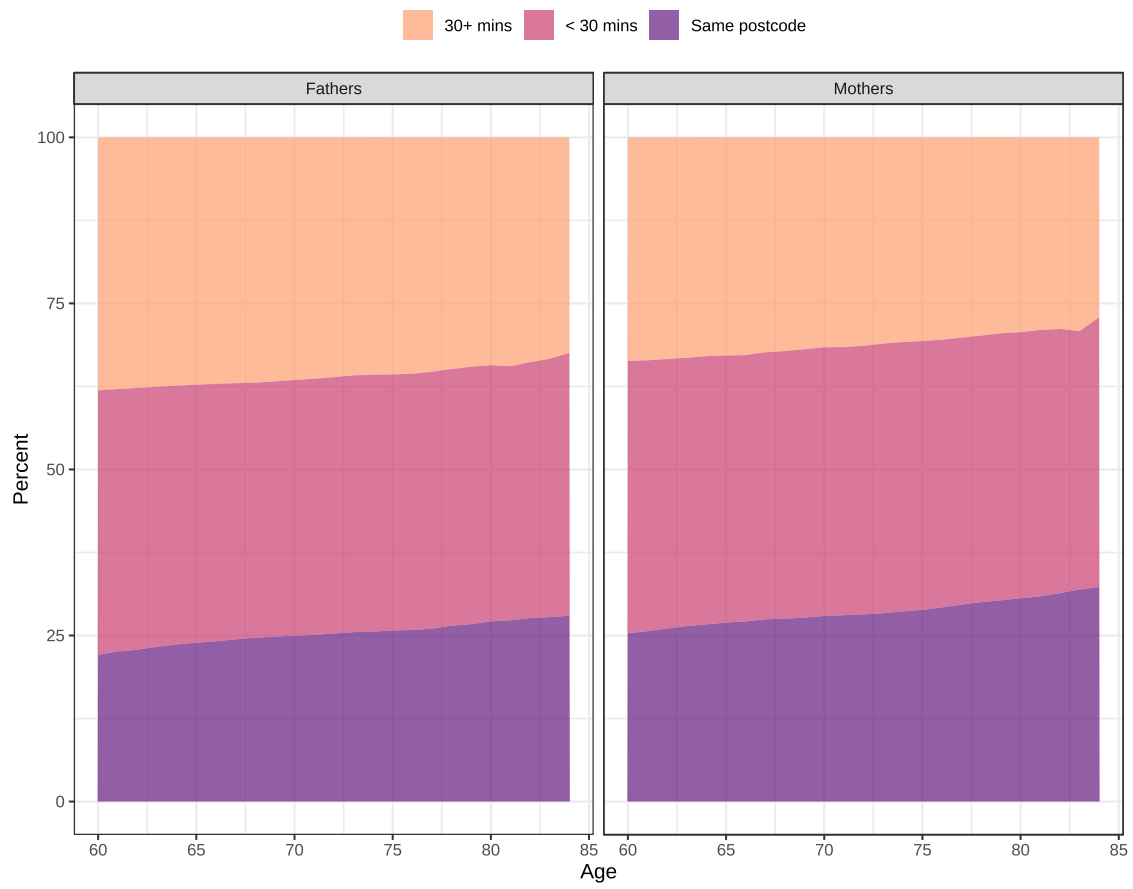
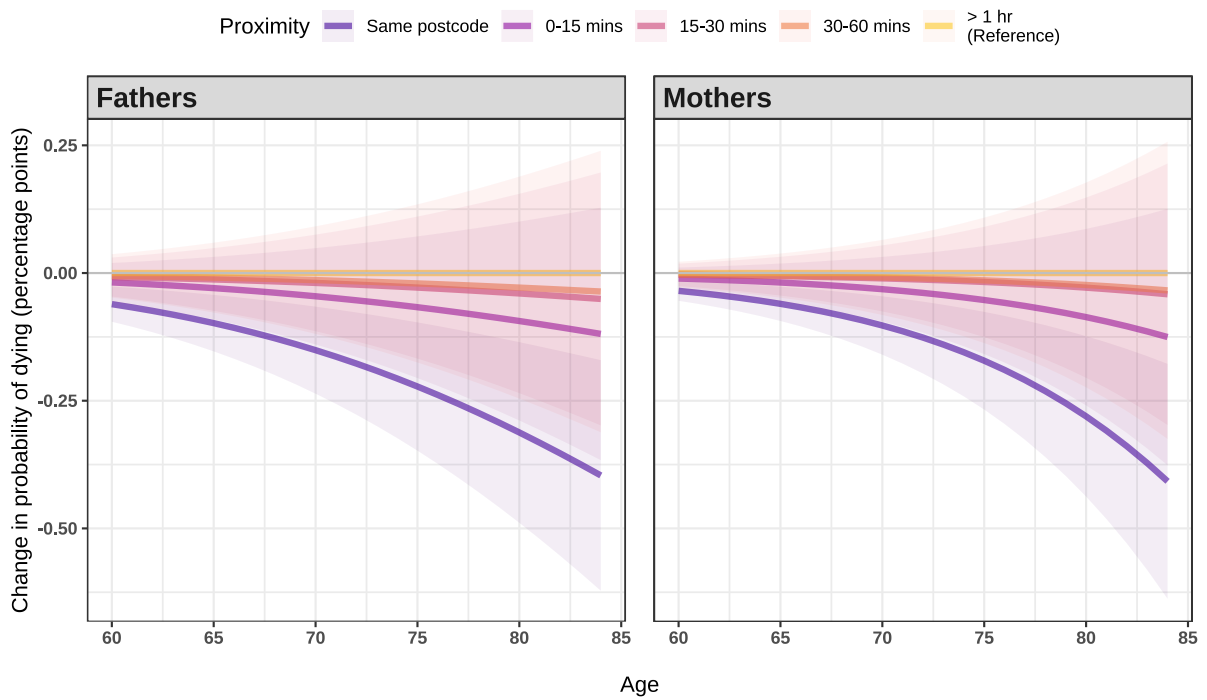


Figure S2. Distribution of parents by categories of proximity to nearest non-coresident child, by age



Source: Authors' calculation using Finnish register data (1998-2023).

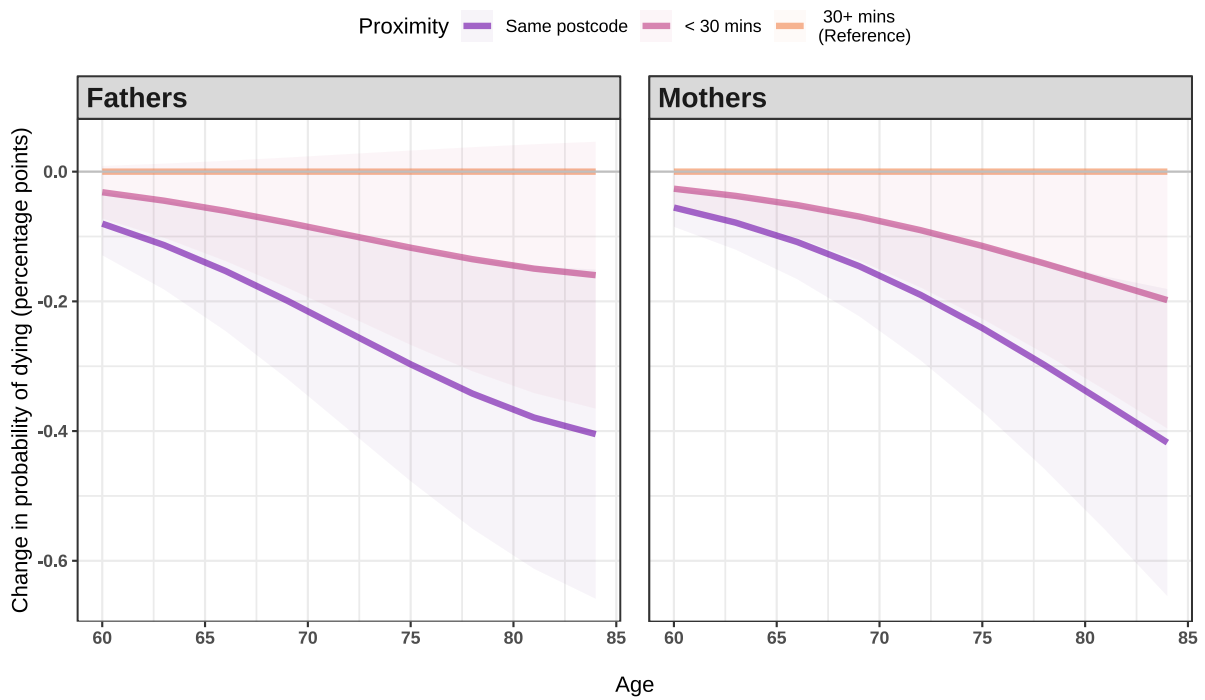
Figure S3. Average marginal effect of distance to nearest non-coresident child on parental mortality, using alternative proximity categories



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, controlling for parent's education, birth cohort, urbanity and region of residence, homeownership, residential mobility, number of children, number of grandchildren, median age of children, whether any child is college-educated, whether any child experienced divorce, and whether any child was unemployed in the past year. Shaded area represents 95% confidence interval.

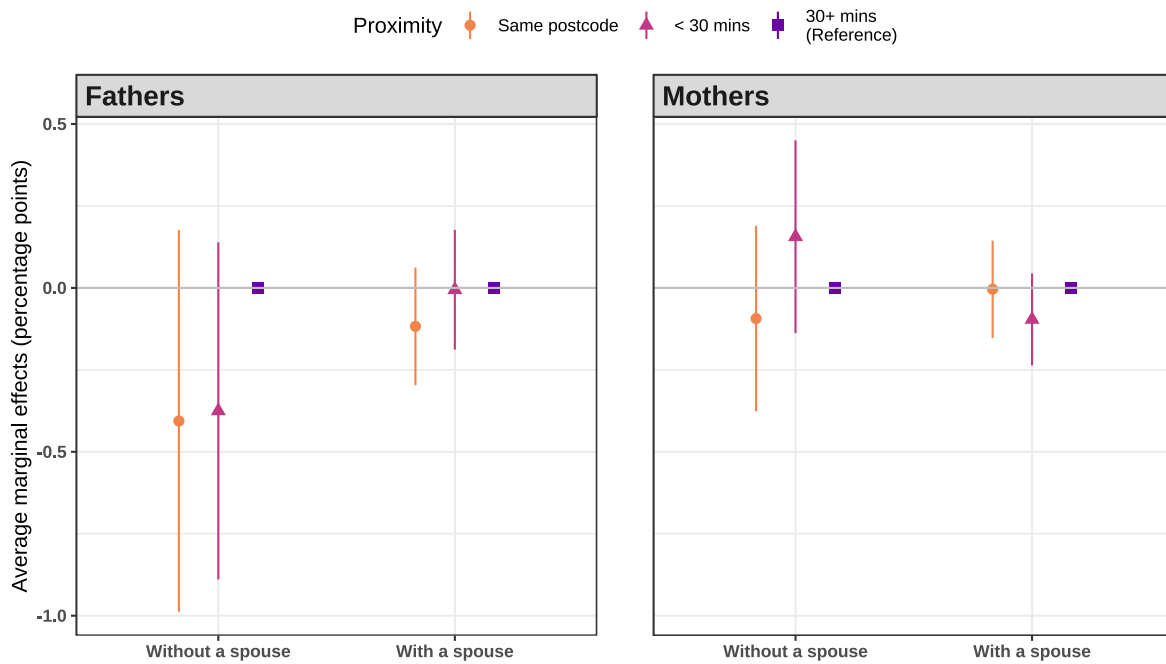
Figure S4. Average marginal effect of distance to nearest non-coresident child on parental mortality: urban areas



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for urban-residing mothers and fathers, controlling for parent's education, birth cohort, urbanity and region of residence, homeownership, residential mobility, number of children, number of grandchildren, median age of children, whether any child is college-educated, whether any child experienced divorce, and whether any child was unemployed in the past year. Shaded area represents 95% confidence interval.

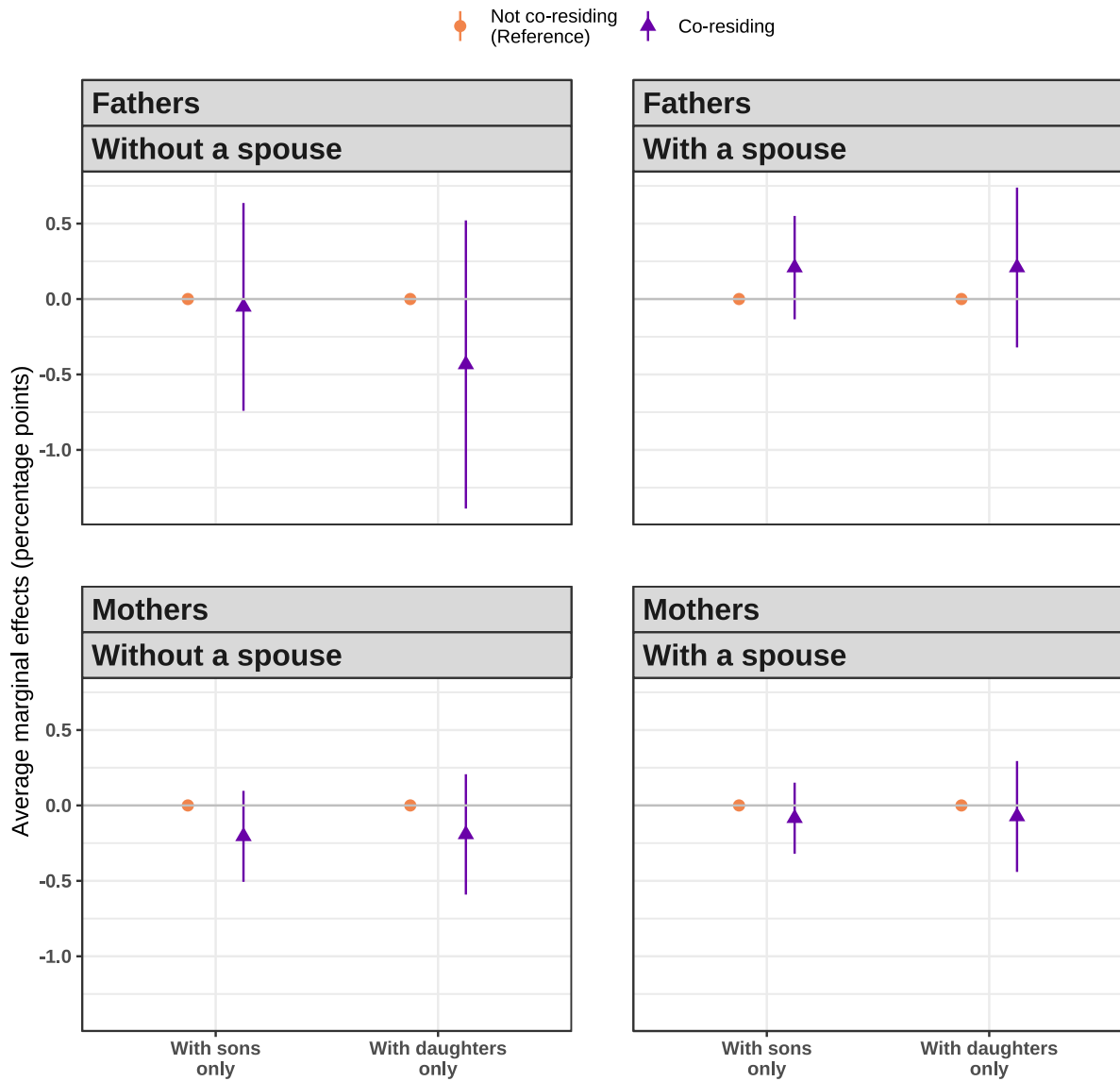
Figure S5. Two-way interaction of proximity to the nearest non-coresident child and presence of spouse on the mortality of parents with a co-resident child



Source: Authors' calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting proximity to nearest non-coresident child with presence of spouse, and controlling for parent's education, birth cohort, urbanity and region of residence, homeownership, residential mobility, number of children, number of grandchildren, median age of children, whether any child is college-educated, whether any child experienced divorce, and whether any child was unemployed in the past year. Bars represent 95% confidence interval.

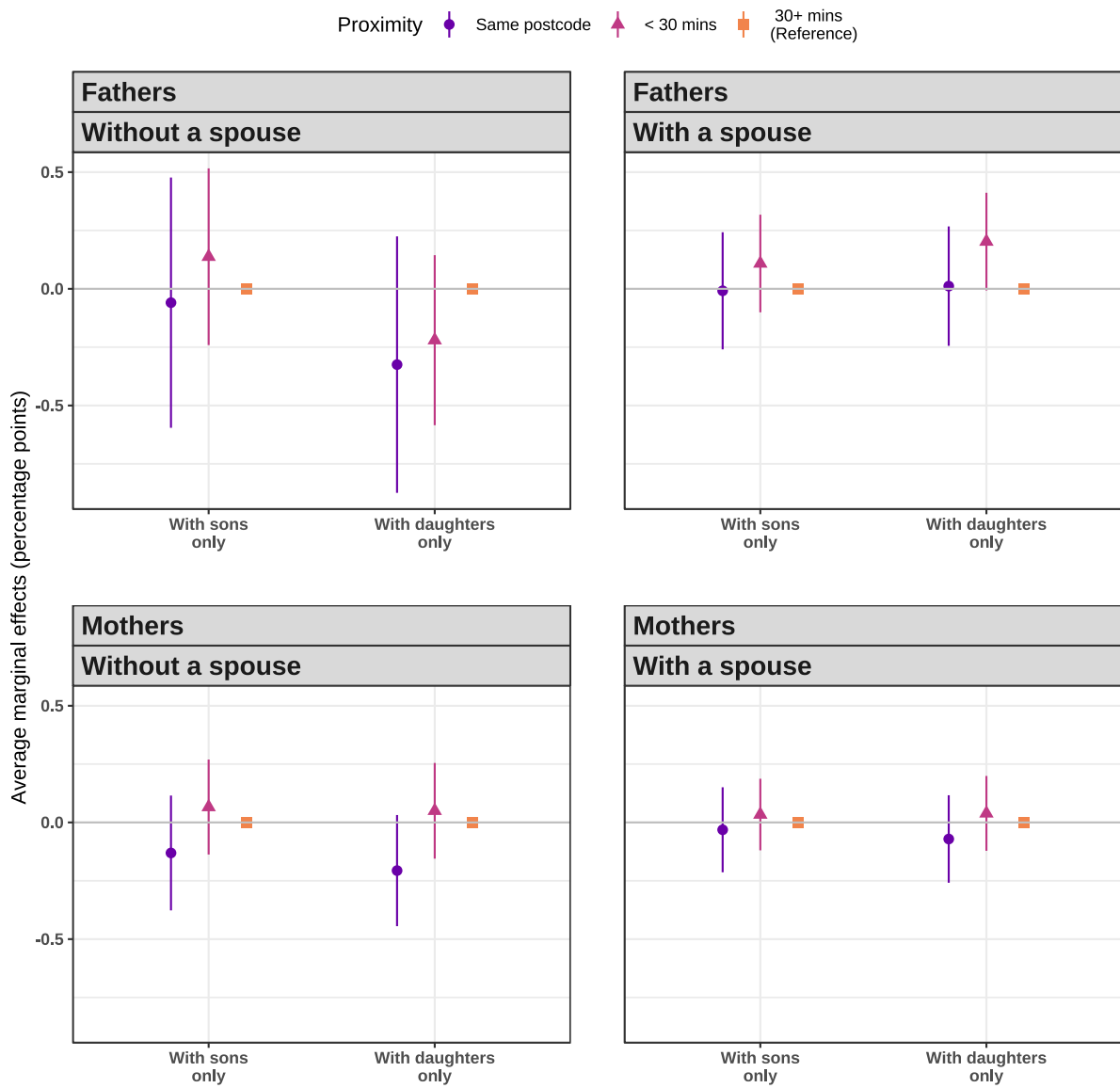
Figure S6. Three-way interaction co-residence with children, presence of spouse, and children’s gender on parental mortality: among parents with only one child



Source: Authors’ calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting co-residence with children with presence of spouse and gender composition of children, and controlling for parents and children’s characteristics. Bars represent 95% confidence interval.

Figure S7. Three-way interaction of proximity to the nearest non-coresident child, presence of spouse, and children’s gender on parental mortality: among parents with only one child



Source: Authors’ calculation using Finnish register data (1998-2023).

Note: Results are based on separate survival models for mothers and fathers, interacting proximity to nearest non-coresident child with presence of spouse and gender composition of children, and controlling for parents and children’s characteristics. Bars represent 95% confidence interval.