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Abstract

Residential mobility is one strategy to cope with the challenges of ageing. But how health decline triggers residential mobility and whether this relationship differs by parental status remain underexplored. Using data on parents and non-parents aged 50+ from the Survey of Health Ageing and Retirement in Europe (SHARE), we perform multinomial logistic regression to examine how recent and previous experiences of acute health events, functional limitation, worsened frailty status, and worsened self-rated health influence the two-year probability of transitions between independent private home living, co-residence with a child (among parents), receiving home-based care, and nursing home admission. We find that none of the health variables are associated with parents' co-residential moves with adult children, while acute health events, functional limitation, and worsened frailty are associated with transitions to home-based care for parents and non-parents alike. Previous experiences of these health declines have a stronger influence on most residential transitions compared to their recent counterparts across parental status, suggesting that the "triggering" effects of health on residential mobility take time. Our findings demonstrate the importance of viewing late-life residential mobility from a relational, competing risk framework, and highlight home-based care as key strategy for responding to health challenges in later life.

Keywords: residential mobility, ageing, health, formal care, intergenerational coresidence

Introduction

Where and with whom ageing adults live as they face declining health is of increasing importance for population health scholars, policymakers, and families in ageing societies (Weeks et al., 2013). Population ageing raises demand for age-appropriate housing and healthcare, thus putting pressure on public resources, welfare systems, as well as immigration, which supplies a large chunk of formal care in developed settings (Williams, 2011). In Europe, adult children are among the greatest sources of informal support, especially in regions with strong family ties and weak formal care services (Bolin et al, 2008; Bonsang, 2009). When health care needs are high, however, informal care cannot substitute formal and specialized care, especially in strong welfare contexts (Haberkern & Szydlik, 2009; Bonsang, 2009). The rising levels of childlessness in Europe also raises interest in the care arrangements of non-parents, who face informal care deficits and are hence more likely to avail of formal care services (Albertini & Mencarini, 2012; Wenger et al., 2007). Less given attention in the residential mobility literature is home-based care, the growing preference for which reflect ideals of *ageing in place* and independent living, especially amid the deinstitutionalization of old-age care provision in many European countries (Ilinca et al., 2015).

While residential relocations are less common in the older ages (Falkingham et al., 2016; Geist & McManus, 2008), older adults' living preferences are motivated by unique opportunities and constraints, including their health. Following retirement, better health may facilitate residential moves to improve housing conditions and access to amenities. The onset or anticipation of health decline, however, may prompt residential moves to housing considered more manageable in older ages, moves closer to adult children, or even co-residential moves with adult children who could act as informal care providers. In more acute cases, ageing adults

facing health decline may undertake a residential move to meet care needs such as residential care facilities and hospitalization (Litwak & Longino, 1987).

Much of the extant literature on health-related residential mobility sees health decline as a *trigger* for residential moves, drawing on insights from life course theory (Falkingham et al., 2016; Mulder & Hooimeijer, 1999). This idea, however, glosses over how residential mobility (and immobility) is a process that occurs across space and time (Coulter et al., 2016). Indeed, beyond being an immediate reaction to health decline, moving can be a proactive strategy to cope with anticipated future stressors and health status (Pope & Kang, 2010; Zhang et al., 2013). The "triggering" effects of health decline on residential mobility may also be lagged or long-term (Miller et al., 1999), but no study has so far investigated this. Overall, there is still a need to clarify the relationship between health decline and older adults' residential arrangements and transitions, which can be subject to 1) the timing of health decline; 2) how health and health decline are defined, 3) the type of moves that are being studied, which are usually competing risks, and 4) the availability of informal networks, which differ between parents and non-parents.

This study examines how health decline influences the residential transitions of older adults in Europe. Specifically, we answer the following questions: 1) Does the relationship between health decline and residential transitions vary across health dimensions and the timing of health decline? 2) In what ways do the residential trajectories and health-related residential mobility of parents and non-parents differ? Using data from the Survey of Health, Ageing, and Retirement in Europe (SHARE), we analyze transitions between various living arrangements, including living in a private home independently, co-residing with a child, home-based care, and nursing home residence. By expanding the definitions of health decline and residential mobility,

and examining their relationship across parental status, this study provides nuance on the nexus of health and residential mobility in a rapidly ageing context like Europe.

Perspectives on later-life residential mobility

The majority of older adults prefer to live independently in their own homes (Andersson et al., 2018; Weeks, 2005). Nonetheless, residential mobility serves as an adaptive strategy in the face of imbalances between current and desired housing, as well as constraints and opportunities at the individual and household level (Mulder & Hooimeijer (1999). Three foundational perspectives developed between the 1970s and 1990s have informed the extensive scholarship on the dynamics and drivers of older adults' residential mobility. Wiseman & Roseman (1979) were the first to forward an explicit framework for studying late-life residential mobility and migration. Their behavioral framework typologizes movers mainly based on their motives and destinations, including suburbanization, communal living, homes of kin, and institutionalization. Notably, it argues that communal living and institutionalization are preferred over living with or closer to a child in response to both personal care needs and rapid health deterioration.

The framework by Litwak & Longino (1987) takes this typology further, arguing that late-life migration is a developmental process over the life course and can be classified into three types. Following retirement, older adults may engage in *amenity moves*, which aim to enhance one's living environment. When older adults experience "moderate" functional limitations, Litwak & Longino (1987) argue that *assistance moves* are an adaptive strategy aimed at enhancing proximity to family members, primarily adult children. Finally, the framework posits that chronic disabilities towards the end of life may require *nursing home moves* or moves toward long-term care and institutionalization, especially when informal support proves

inadequate. Subsequent empirical findings have supported the relationship between this residential progression and worsening health (van der Pers et al, 2018; Wilmoth, 2010).

A related but more encompassing perspective is that by Mulder & Hooimeijer (1999), who forward the idea that changes in the life course *trigger* residential mobility. These triggers include changes in education, employment, and housing needs. Subsequent studies have established a link between residential moves and marital disruptions (Bloem et al., 2008), retirement (Bloem et al., 2008; Gillespie & Fokkema, 2023), *empty nest* or children leaving the parental homes (Bloem et al., 2008; Bures, 2009), and the characteristics and needs of adult children (Artamanova et al., 2023; Isengard & Szydlik, 2012; Smits, 2010; Zhang et al., 2013). Health is also understood as a trigger but is less emphasized in the framework, and studies have focused on the obvious "health triggers," including functional limitations based on measures of activities of daily living, which are associated with community-based moves and increased co-residence with adult children (Begley & Chan, 2022; Friedman et al., 2016; Isengard & Szydlik, 2012; Miller, 1999; Vergauwen & Mortelmans, 2020). Other studies also find a positive association between the experience of acute medical events such as cardiovascular diseases and increased residential mobility and intergenerational proximity (Choi et al., 2015; Lovasi et al., 2014). The very few studies that explore the role of the decline in self-rated health provide mixed results; some studies find that it is positively associated with nursing home moves (Wilmoth, 2010), while others find no significant association (Gillespie & Fokkema, 2023; Longino et al., 2008; van der Pers et al, 2018). Fewer studies examine physical frailty, which is linked to a greater likelihood of hospitalization and home-based care (Ilinca & Calciolari, 2014; Rochat et al., 2010).

A relational view of residential mobility

One strand of the residential mobility literature examines the linked lives of older parents and their adult children, particularly the drivers of their proximity and co-residence (Artamanova et al., 2020; Smits, 2010; Zhang et al., 2012). Most co-residential moves are undertaken by children moving in with their parents, rather than the other way around (Zhang et al., 2012), and mutual support needs mostly drive these residential moves (Artamanova et al., 2020; Smits, 2010). Much less studied, however, is whether health decline influences parents to *remain* in co-residence with a child. Based on previous research, the risk of institutionalization can be mitigated by support from a co-resident child (Artamanova et al., 2020; Bonsang, 2009; Lo Sasso & Johnson, 2002).

How adult children factor in their parents' residential mobility can be assessed by comparing parents and non-parents' residential mobility. To compensate for the lack of children and smaller social networks, non-parents rely on their siblings, extended family, and nonfamily networks, who nonetheless cannot replace formal care in the face of poor health and intense care needs (Albertini & Mencarini, 2012; Deindl & Brandt, 2016). Indeed, childlessness is associated with a greater likelihood of nursing home use (Aykan, 2003). Less known is whether childlessness is also associated with home-based care, which is largely overlooked in the study of older adults' residential mobility despite the growing policy preference for this living arrangement (World Health Organization, 2016).

Such limited attention to transitions from co-residence and the transition to home-based care, in part, stems from the way residential mobility is conventionally defined in the literature—that is, as a discrete relocation from one dwelling to another. This definition risks discounting the strategies that residentially *immobile* populations and their social networks employ in response to

a health decline. But equally as important as why people move is the question of why they choose not to (De Jong & Fawcett in Schewel, 2019). Recent approaches in human geography reflect on the mobility-immobility divide and the so-called “mobility bias,” emphasizing immobility as a process that "reflects and requires agency; [...] renegotiated and repeated throughout the life course” (Schewel, 2019, p. 330).

Further, a recent review by Coulter et al. (2016) calls for a reconceptualization of residential mobility, and immobility for that matter, as an *explicitly relational process*; that is, they are experienced in relation to other actors. This is especially important to consider in the context of older adults, who may be constrained from residential relocation due to poor health but may still experience qualitative changes in their residential arrangements, such as when receiving paid help or having an adult child move in. Among parents specifically, the transition towards—and the decision to stay in—co-residence is a collective decision between generations and represents an important change in their living arrangements, regardless of who moves where (Caputo, 2019; Zhang et al., 2012).

One way to incorporate this relational framework is by viewing residential mobility in terms of transitions between living arrangements. Drawing inspiration from Raymo and colleagues (2019), Figure 1 illustrates this by showing all possible transitions—represented by arrows—between living arrangements for parents and non-parents. In this study, these arrangements include living in a private home independently, receiving home-based care, living in a nursing home, and co-residing with a child in the case of parents, with death considered the absorbing state. Circular arrows indicate either immobility or intra-state moves, including merely changing a private home address or *amenity move,* which is often not a concern in health research but is inadvertently included in conventional definitions of residential mobility.

Data and methods

Data

We use data from the Survey of Health, Ageing, and Retirement in Europe (SHARE), a longitudinal survey of older persons in 26 European countries[1]. About every two years since 2004, SHARE has collected information on health, family, social networks, and socioeconomic status from individuals selected through multistage probability sampling (for detailed information, see https://share-eric.eu/data/). We use the regular waves of SHARE, covering the period 2004-2021, but we exclude wave 4 respondents given that information on home-based care was not collected (see supplementary file for cross-wave comparison of survey questions on home-based care). We also exclude wave 1 because it does not contain information on prior health decline. Nonetheless, we use information from waves 1 and 4 to infer information on health decline for respondents in waves 2 and 5, respectively. By design, institutionalized populations such as nursing home residents were not part of baseline samples in SHARE, but individuals who had subsequently moved to a nursing home were traced and interviewed.

SHARE also covers older people's co-resident partners or spouses. Because it defines children as either biological, adopted, or step-children, currently partnered parents (e.g., married, cohabiting) have the same set of children as their co-resident partners. Information on every child is collected across survey waves, including their age and residential proximity. We restrict the analytical sample to individuals aged 50 and over who participated in at least two consecutive survey waves. We further limit the sample of parents to those who have no children

[1] SHARE countries in the analysis sample include Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Israel, Czech Republic, Poland, Luxembourg, Hungary, Slovenia, Estonia, Croatia, Lithuania, Bulgaria, Cyprus, Finland, Latvia, Malta, Romania, Slovakia.

aged 17 or younger and those who have information on any of the adult child's residential proximity. These exclusion criteria lead to an analytical sample of 71,183 transitions from 42,697 parents and 7,199 transitions from 4,239 non-parents. This analysis sample remains representative of SHARE respondents (see supplementary file).

Variables

Residential states. Upon entry into the sample, individuals are living in a private home, either independently, with a child, or with a home care provider. Co-residence with a child is based on whether any adult child is living in the same housing unit as the respondent. Meanwhile, home-based care is based on the receipt of any professional home care in the last 12 months (see supplementary file for cross-wave comparison of home-based care questions in SHARE). In small cases (N = 863) where a respondent is living with a child and receives home-based care, we categorize them as living with a child. Nursing home residence is based on whether the interview was done in a nursing home or care facility. Finally, we account for mortality using information from end-of-life interviews.

Health decline. We operationalize health decline in four ways. First, we consider acute health events, which pertain to the experience of either a heart attack, stroke or diagnosis of cerebrovascular disease, cancer diagnosis, or hip fracture since the preceding interview. While other health events are worth considering, these are the only conditions about which information on the timing was collected across SHARE waves. Second, we also consider functional limitation, based on whether the individual initially had no difficulty performing any of the six activities of daily living (ADL) but was limited in the next wave. These ADLs include self-care tasks such as dressing, walking across a room, bathing, eating, getting in or out of the bed, and using the toilet. Third, we define health decline based on worsened frailty status. Frailty is a

measure of decreased reserve and increased vulnerability to external stressors (Fried et al., 2001), and thus measures physical health beyond just functioning. We compute sex-specific frailty indices using the SHARE-Frailty Instrument developed by Romero-Ortuno and colleagues (2010), which measure frailty based on fatigue, loss of appetite, hand grip strength, functional difficulties, and physical activity. The instrument classifies individuals into non-frail, pre-frail (an intermediate state), and frail. We deem changes from a non-frail or pre-frail to a frail state, or from a non-frail to a pre-frail state since the preceding wave as a health decline. Finally, we examine changes in self-perceived health, from either excellent, very good, or good, to fair or poor self-rating. For each of these health indicators, we define a recent health decline as one occurring between the current and preceding waves, and a previous health decline simply as the lag of a recent health decline. Thus, a recent health decline happened within the last two years, while a previous decline happened between around two to four years ago.

Other independent variables. We control for sociodemographic covariates that are known to be associated with residential mobility. These include gender (1 – male, 2 – female), education (1 – primary or lower; 2 – lower secondary; 3 – upper/post secondary; 4 – college or higher), marital status (1 – never married; 2 – married/registered partnership; 3 – separated/divorced; 4 – widowed), homeownership status (1 – homeowner; 2 – otherwise), the number of children, and region of residence (1 - Western Europe; 2 – Central and Eastern Europe; 3 – Northern Europe; 4 – Southern Europe). To account for the large gap between waves 2 and 5, we also incorporate a dummy variable to represent the discontinuity between periods 2006-2008 and 2013-2017.

Methods

We are mainly interested in the association between health decline and transitions from two residential states, namely, living independently in a private home and, among parents, co-

residence with an adult child. The transition probability can be modeled as a series of multinomial logistic models conditional on the previous state (Dudel &Myrskyla, 2017; Hale et al., 2020). Specifically, we model the probability of transition from origin state *i* to destination state *j* for an individual aged *x* over the regular interval *t*. This model takes the following multinomial logit form:

$$\ln\left(\frac{p_{ij}(x,t)}{p_{iK}(x,t)}\right) = a_{ij} + b_{1ij}x + b_{2ij}x^2 + \gamma_{ij} * HD + \boldsymbol{X\beta}$$

where $t = 2$ given the biennial design of SHARE; a_{ij} is the intercept, b_{1ij} and b_{2ij} are the coefficients for age, which takes a quadratic form; γ_{ij} is the coefficient for the health decline variable, and **β** is the vector of coefficients for sociodemographic covariates. Due to low sample size, we excluded nursing homes as a destination for parents co-residing with a child (N = 77). Further, because individuals are nested within households across survey waves, we allow intragroup correlation within a household across waves and compute for clustered standard errors.

Based on these models, we calculate and present age-specific transition probabilities of parents and non-parents and examine the average marginal effects of health decline on these transitions. Because well-known relative measures such as the odds ratios and relative risks are not directly comparable across models, we instead present average marginal effects (AME), which measure the change in the probability when the risk factor, i.e., health decline, is experienced, holding all other factors constant (Norton et al., 2015). We perform all calculations in Stata (version 18).

Results

Descriptives

We briefly describe the parents and non-parents in our analysis sample (Table 1). At the time of entry into the survey, a greater share of non-parents than parents were aged 50-59 (38% vs 33%) and aged 80-84 (11% vs 9%). The sample is also predominantly female, and there are more females among parents than non-parents (57% vs 52%). Parents and non-parents have comparable education levels, with a majority having finished at least upper/postsecondary schooling. There is a stark difference in the marital status of parents and non-parents, driven almost entirely by the large share of never-married non-parents (42%). Additionally, homeownership is greater among parents than non-parents (77% vs 67%). There is an uneven distribution of respondents across regions, with the plurality of parents (34%) and non-parents (43%) coming from Western Europe.

We additionally show the rate of recent and previous health decline in the analysis sample (Table 1). Parents and non-parents have comparable experiences of health decline, with recent acute health events, functional limitation, and worsened frailty having each been experienced by 5 to 7 percent of the observations. More common is worsened self-rated health, which a fifth of the sample has experienced. The share of those who previously experienced these health outcomes is slightly lower than those who experienced a recent health decline.

Table 2 provides the share of transitions from our states of interest. From independent private home living, the greater majority of parents (85% of transitions) and non-parents (88% of transitions) have stayed within this state. Notably, a slightly greater share of non-parents have moved to home-based care (7% vs 5% of transitions) and a nursing home (1% vs 0.6% of

transitions), and they also have higher mortality (4.2% vs 3.7%). Among parents, 7% of transitions involve co-residence with a child. From the state of child co-residence, the majority have stayed within this state (62% of transitions), although a considerable share (32% of transitions) have transitioned to a private home. Receiving home-based care (1%) and moving to a nursing home (0.6%) are both rare transitions.

Residential trajectories

Age-specific transition probabilities. Figure 1 presents biennial age-specific transition probabilities based on models that do not yet account for health decline. The first panel shows that most parents independently living in a private home will stay in this state within two years. The probability of moving to co-residence with a child dramatically declines with age. In contrast, the probability of transitions to home-based care and nursing homes gradually increases with age; after around age 80, parents are more likely to transition to home-based care than to co-residence with a child. We observe the same increasing age pattern of formal care utilization for non-parents. However, their biennial probabilities of transition to home-based care and nursing homes are greater than parents across all ages. In the case of parents who are already co-residing with a child, the greater majority will also stay in this state within two years, but there is a slightly increasing probability of transition to private home living until age 60, after which it dramatically declines, likely reflecting increasing likelihood of empty nesting or children moving out of parental homes. The probabilities of transition to home-based care and nursing homes are very small and do not increase with age.

The subsequent subsections examine how health decline influences these transitions.

Moving for assistance. We first examine the role of recent and previous health declines in parents' transitions from independent private home living (Table 3). First, all health measures are negatively associated with the probability of staying in this state, which is mostly explained by higher mortality among those who have had a health decline (not shown). Meanwhile, recent experiences of acute health events, functional limitation, and worsened frailty are associated with a 1.1, 2.7, and 3.1 percentage-point increase in the probability of transition to home-based care. The AMEs of lagged health variables are also substantial, if not higher than their recent counterparts. Previous acute health events, functional limitation, and worsened frailty are associated with a 1.7, 3.3, and 3 percentage-point increase in the probability of receiving home-based care. In contrast, none of the health decline variables is associated with the transition to co-residence with a child. Owing to the rarity of nursing home moves, the AMEs for this transition are very small and not statistically significant, but previous functional limitation and worsened frailty are associated with substantial 0.5 and 0.4 percentage-point increases in the probability of nursing home transitions.

Next, we compare across parental status the average marginal effects of health decline on the probability of staying independently in a private home and receiving home-based care. Similar to parents, the likelihood of non-parents staying in a private home is negatively associated with acute health events, functional limitation, and worsened frailty, which is driven by the higher probability of dying among those who had a health decline (not shown). Recent functional limitation (AME = .015) and worsened frailty (AME = .024) have substantial associations with receiving home-based care, although they are not statistically significant. Notably, a previous functional limitation is associated with a significant 7 percentage-point increase in the probability of non-parents consequently receiving home-based care, more than

twice higher than the association observed among parents. None of the health decline indicators have a statistically significant association with non-parents' nursing home moves, although it is worth noting that previous acute health events and functional limitation considerably increases the probability of nursing home moves by 1.6 and 1.9 percentage points, respectively.

Moves out of co-residence. We also examine the association between recent and previous health decline and the transitions from an initial state of co-residing with a child (Table 3). A recent acute health event (AME = -0.035) and worsened self-rated health (AME = -0.029) have a substantial negative association with the probability of staying in this living arrangement, which is largely explained by mortality, while a previous decline in frailty status is positively associated with the probability of staying in child co-residence (AME = .040). Meanwhile, we find that, except for self-rated health, all recent and previous health measures are associated with a lower probability of transition to independent private home living. On the other hand, previous experiences of acute health events (AME = 0.019), functional limitation (AME = 0.013), and worsened frailty (AME = 0.013) have a substantial positive association with the probability of transition to home-based care following co-residence with children.

Sensitivity analysis

We conduct several sensitivity analyses to test the robustness of our results. First, sample attrition may be due to non-response and selected mortality. To account for this, we compute inverse probability weights (IPWs) and accordingly apply them to our estimations to account for sample attrition (see supplementary file for further details). Although the application of IPWs increases the association between our health decline measures and the transition to mortality, the substantive interpretation of the results from the unweighted and weighted regression models for other transitions is consistent. This is with a few exceptions, such as the significance of the

average marginal effects of recent and previous acute health events on the probability of non-parents' nursing home moves, and the increased positive association of previous functional limitation, worsened frailty, and worsened self-rated health with the probability of staying in child co-residence.

Second, we define child co-residence as living in the same dwelling, but near co-residence, i.e., living in the same building, is also a possible residential arrangement between parents and their children, especially in settings where the housing market allows it and where co-residence is culturally less common (Isengard & Szydlik, 2012). To examine whether the distinction between co-residence and near co-residence matters in parents' health-related residential mobility, we generate the transition models for parents using a state space that defines adult-child co-residence to include children who are living either in the same apartment or in the same building. The results indicate that defining co-residence in this way does not radically alter the association between health decline and residential transitions, except that the previously observed small, positive association between previous acute health events and the transition to child co-residence becomes negative in the new models. This suggests that in response to a previous health event, living very close to children is preferred to co-residence.

Third, by examining two-year residential transitions, we may not be capturing accelerated utilization of formal care services that are associated with health decline during a short period before death. To check if this is such the case, we compared the association between recent health decline and using home-based care and nursing home care in the last 12 months among surviving versus deceased individuals in the analysis sample. We found that, on the contrary, the odds of receiving home-based care and nursing home admission following health declines are much higher among surviving individuals.

All results of the sensitivity analyses are provided in the supplementary file.

Discussion

Residential mobility in later life is known to be driven largely by older adults' care needs, but the extant literature does not adequately explain how declining health—a multidimensional construct—influences the residential decisions of older parents and non-parents. In this exploratory study, we examine the influence of recent and lagged experiences of acute health events, functional limitation, worsened frailty, and worsened self-rated health on older Europeans' residential transitions, viewing residential mobility not merely as a change in residence but as a relational process over the life course (Coulter et al., 2016).

First, we find that there are differences in the link between health and residential mobility across the types of health decline and residential transitions being considered. Self-rated health has no meaningful association with most transitions, except for the negative association between a recent decline in self-rated health and the probability of staying in child co-residence, which is driven by higher mortality in this group. This overall lack of association between self-rated health and residential mobility is consistent with previous studies (Guillespie and Fokkema, 2023; van der Pers et al., 2018; Wilmoth, 2010).

On the other hand, adverse health events, functional limitation, and worsened frailty, are associated with transitions to home-based care. We do not observe as strong associations for parents' transition to nursing homes, which suggests that home-based care and formal care can be competing strategies for dealing with health challenges. Incorporating home-based care is an important addition to the frameworks presented by Wiseman and Roseman (1979) and Litwak

and Longino (1987), which, due to their emphasis on geographic mobility, only highlight nursing home moves as a formal care strategy.

Second, where we find significant associations, the lagged experience of health decline has a comparable, if not greater, influence on residential transitions than recent experiences. Among parents, recent and previous physical health declines have comparable strengths of association with the transition to home-based care, and a previous experience of worsened frailty is associated with a higher probability of staying in co-residence with a child than is recent experience of this health outcome. Among non-parents, a previous functional limitation and previous health event, but not their recent counterparts, are associated with the transition to home-based care and nursing home moves. All this suggests that the influence of health on residential mobility does not immediately attenuate, but may even be compounded, through time. Studies that examine health as triggers only refer to immediate events preceding the move, but our findings suggest that there may be a need to reframe their relationship. Beyond viewing health decline as a trigger in the narrow sense of the term, future inquiry should explore the longer-term implications of health on residential decisions, including how individuals and their families modify their living arrangements in anticipation of disease progression, for example.

Our analysis also shows that non-parents have a higher probability of receiving home-based care and moving to nursing homes than parents, consistent with the literature (Albertini & Mencarini, 2012; Wenger et al., 2007). Both groups, however, present an increasing probability of receiving home-based care as they age, especially when they experience health decline. In contrast, parents are increasingly less likely to co-reside with their children. Previous findings suggest that intergenerational co-residence is mostly accounted for by children moving in with their parents, rather than the other way around, and it is driven by adult children's needs more

than their parents (Smits et al., 2010, Zhang et al., 2013). This could help explain the lack of a strong, positive association between most of our health decline measures and the transition to co-residence with an adult child. It is interesting to note, however, that previous physical health decline has a positive association with the transition from co-residence with children to receiving home-based care. To an extent, this also supports Litwak & Longino's (1987) idea that when care needs are more than what informal care providers can take on, older adults then turn to formal care. This does not suggest, however, that children turn away from or become less present in the lives of their ageing parents. On the contrary, greater informal support from adult children—especially those co-residing with their parents—can positively promote parents' utilization of home-based care. That is, children act as "advocates" for formal care (Blomgren et al., 2008).

We note several limitations in our analysis. First, SHARE excludes nursing home respondents at baseline and likely underrepresents them in its follow-up surveys, but a comparison of SHARE data with Dutch and Danish registries shows that the survey data is representative of the overall home-care population (Bom et al., 2023). In any case, we do not see the baseline under-coverage of nursing home residents as a major problem given that we are only interested in the association between health and nursing home admission. Second, due to sample size limitations, we have not accounted for the role of other social networks such as relatives and friends on older adults' residential decisions, especially among non-parents. We are also not able to examine less common but potentially relevant transitions, such as transitions from home-based care to other residential arrangements. Third, we have separately examined various types of health measures, but these conditions can simultaneously afflict an individual. Future work can examine the role of multimorbidity, as well as other dimensions such as mental and cognitive

health, specific acute health events, and chronic conditions. Finally, we look at the whole of Europe, but welfare regimes and education levels are important forces in shaping residential decisions and are important avenues for future research.

All this notwithstanding, we demonstrate the many nuances of residential mobility by viewing it from a relational, competing risk framework and examining different health dimensions and their timing. Our study builds on and confirms several results from previous studies, such as the importance of physical health decline as a driver of nursing home moves. It also unveils novel insights, including the prominence of previous health decline in shaping residential decisions—highlighting that residential mobility is not strictly an immediate reaction to stressors but a process that takes time. These findings have important implications for ageing societies like Europe, which grapples with the demand for housing and care that are age-appropriate and health-responsive. For one, the persistence of health problems in the older ages requires heavy investment in formal care, especially given the rising levels of childlessness in many countries. Even among parents, our findings suggest that adult-child co-residence does not necessarily substitute formal care in the older ages. The greater preference for home-based care over child co-residence and nursing homes, especially in the face of health decline, evokes the growing demand for care workers to support ageing populations.

Table 1. Parents and non-parents' characteristics upon entry into the survey and their experience of health decline

	Parent		Non-parent	
	N	%	N	%
Age group				
50-59	13,759	32.8	1,595	38.1
60-69	14,768	35.2	1,263	30.2
70-79	9,803	23.4	877	21.0
80-84	3,631	8.7	449	10.7
Gender				
Male	18,305	42.9	2,042	48.2
Female	24,392	57.1	2,197	51.8
Education				
Primary or lower	8,746	20.7	906	21.6
Lower secondary	7,280	17.3	665	15.9
Upper/postsecondary	17,208	40.8	1,669	39.9
College or higher	8,945	21.2	946	22.6
Marital status				
Married/registered partnership	31,219	73.8	1,632	38.8
Never married	740	1.7	1,773	42.1
Separated/divorced	4,054	9.6	335	8.0
Widowed	6,305	14.9	469	11.1
Homeownership				
Yes	32,965	77.2	2,857	67.4
No	9,732	22.8	1,382	32.6
Region				
Western Europe	14,480	34.1	1,827	43.3
Central and Eastern Europe	9,960	23.4	649	15.4
Northern Europe	10,889	25.6	899	21.3
Southern Europe	7,155	16.8	842	20.0
Recent: acute health event[1]	3,876	5.5	376	5.2
Recent: functional limitation[1]	3,681	5.2	392	5.5
Recent: worsened frailty[1]	4,785	6.7	486	6.8
Recent: worsened self-rated health[1]	15,179	21.3	1,514	21.0
Previous: acute health event[1]	1,500	3.0	134	2.7
Previous: functional limitation[1]	1,925	3.8	213	4.3
Previous: worsened frailty[1]	2,579	5.1	255	5.1
Previous: worsened self-rated health[1]	9,049	18.0	885	17.7

Note: some column totals do not add up to 100% due to rounding error.
[1] Calculated from observations pooled across SHARE waves

Table 2. Number of transitions from key states, by parental status

	Parent		Non-parent	
	N	%	N	%
Transitions from living in a private home independently				
Stay in private home alone	43,824	84.1	5,533	88.1
To home-based care	2,602	5.0	410	6.5
To co-residence with a child	3,398	6.5	-	-
To a nursing home	305	0.6	73	1.2
Died	1,962	3.8	267	4.3
Total	52,091	100.0	5,120	100.0
Transitions from co-residence with a child				
To a private home alone	4,704	31.9	-	-
To home-based care	222	1.5	-	-
Stay in co-residence	9,134	61.9	-	-
Died	687	4.7	-	-
Total	14,747	100.0		

Note: some column totals do not add up to 100% due to rounding error.
Calculated from observations across pooled SHARE waves

Table 3. Average marginal effects of recent and previous health declines on selected transitions

Transition	Recent health decline				Previous health decline			
	Acute health events	Functional limitation	Worsened frailty	Worsened self-rated health	Acute health events	Functional limitation	Worsened frailty	Worsened self-rated health
From independent private home living, parents								
Stay in private home	-0.0664***	-0.0729***	-0.0648***	-0.0160***	-0.0567***	-0.0688***	-0.0528***	0.0106*
	(0.008)	(0.0086)	(0.0071)	(0.0039)	(0.0131)	(0.0126)	(0.0100)	(0.0051)
To home-based care	0.0114**	0.0269***	0.0307***	0.0022	0.0168*	0.0329***	0.0299***	-0.0001
	(0.0044)	(0.0051)	(0.0043)	(0.0023)	(0.0073)	(0.0076)	(0.0060)	(0.0030)
To co-residence with a child	-0.0003	0.0031	0.004	-0.0043	0.0111	0.0057	-0.0044	-0.0065+
	(0.0054)	(0.0060)	(0.0048)	(0.0027)	(0.0091)	(0.0084)	(0.0065)	(0.0035)
To a nursing home	0.0024	0.0029+	0.0022+	-0.0006	0.0006	0.0047+	0.0038+	0.00023
	(0.0016)	(0.0016)	(0.0013)	(0.0008)	(0.0021)	(0.0026)	(0.0020)	(0.0010)
From independent private home living, non-parents								
Stay in private home	-0.0762***	-0.0754***	-0.0651***	-0.0260**	-0.0783*	-0.101**	-0.0701*	-0.0065
	(0.0207)	(0.0221)	(0.0185)	(0.0098)	(0.0385)	(0.036)	(0.0289)	(0.0131)
To home-based care	0.0095	0.0150	0.0241+	-0.0046	0.0088	0.0695*	0.0351	-0.0062
	(0.015)	(0.0162)	(0.0138)	(0.0075)	(0.0259)	(0.0305)	(0.0225)	(0.0106)
To a nursing home	0.0047	0.0046	0.0056	0.0038	0.0164	0.0191	0.0003	-0.0037
	(0.0076)	(0.0069)	(0.0061)	(0.0035)	(0.0143)	(0.0128)	(0.0077)	(0.0039)
From co-residence with a child, parents								
To independent private home	-0.0233	-0.0299	-0.0236	0.0133	-0.0368	-0.0621*	-0.0663**	0.00944
living	(0.0191)	(0.0186)	(0.0167)	(0.0097)	(0.0300)	(0.0251)	(0.0235)	(0.0132)
To home-based care	0.0072	0.0078	0.0039	-0.0005	0.0185+	0.0126	0.0133+	0.00329
	(0.0048)	(0.0052)	(0.0040)	(0.0025)	(0.0108)	(0.0085)	(0.0074)	(0.0037)
Stay in co-residence with a child	-0.0354+	-0.0095	-0.0025	-0.0290**	-0.0309	0.0043	0.0395	-0.0128
	(0.0200)	(0.0193)	(0.0173)	(0.0101)	(0.0321)	(0.0268)	(0.0248)	(0.0139)

Notes:

1. Standard errors in parentheses; significance levels: * p < .05; ** p < .01; *** p < .001
2. Estimates are from separate multinomial logit models for each health indicator, controlling for age and age^2, sex, education, marital status, number of children (for parents), homeownership status, and region (coefficients not shown).
3. Parents' transition from child co-residence to a nursing home is excluded due to low sample size.

Figure 1. Transitions between selected living arrangements, by parental status

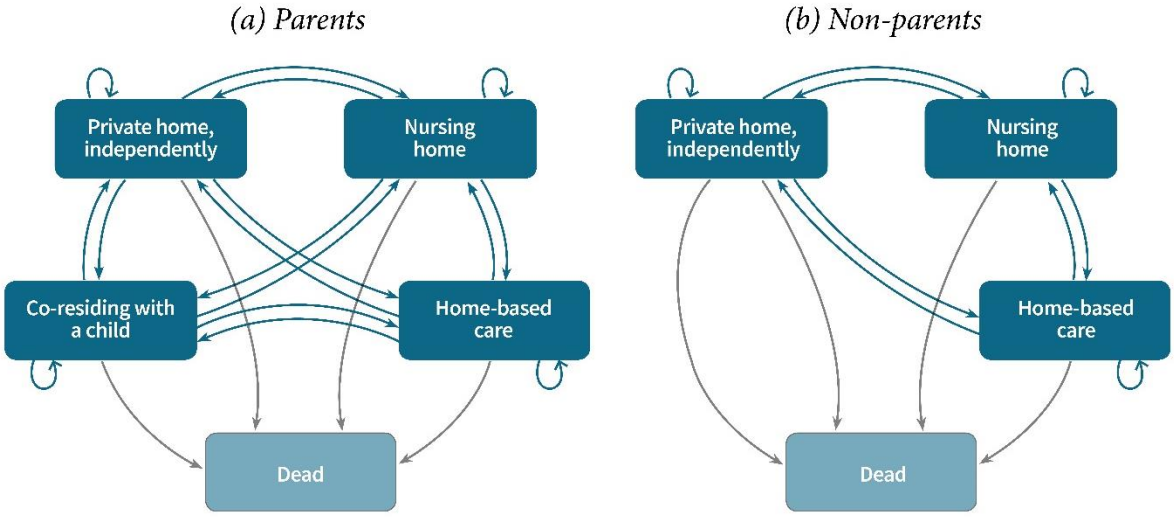
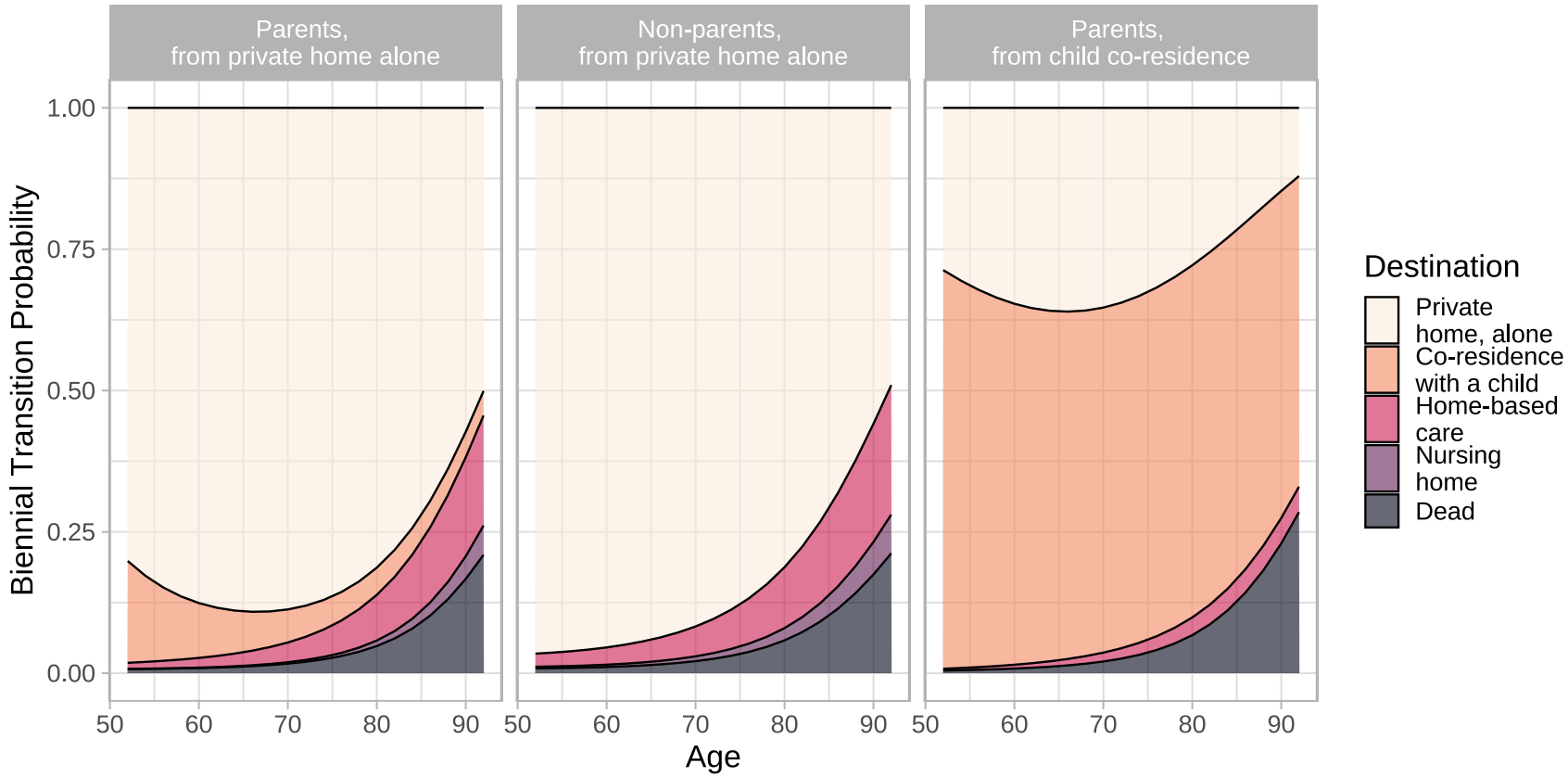


Figure 2. Age-specific two-year probabilities of selected transitions



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SUPPLEMENTARY MATERIALS

Table A1. Comparison of home care questions across regular SHARE waves

Wave	**Variable names**	**Questions**
1, 2	hc032d1, hc032d2, hc032d3	Please look at card 16. During the last twelve months, did you receive in your own home any of the kinds of care mentioned on this card? *1. Professional or paid nursing or personal care* *2. Professional or paid home help, for domestic tasks that you could not perform yourself due to health problems* *3. Meals-on-wheels* *96. None of these*
4	*Not asked*	*Not asked*
5-9	hc127d1, hc127d2, hc127d3, hc127d4	We already talked about the difficulties you may have with various activities because of a health problem. Please look at Card ^SHOWCARD_ID. During the last twelve months, did you receive in your own home any professional or paid services listed on this card due to a physical, mental, emotional or memory problem? *1. Help with personal care (e.g. getting in and out of bed, dressing, bathing and showering)* *2. Help with domestic tasks (e.g. cleaning, ironing, cooking)* *3. Meals-on-wheels (i.e. ready made meals provided by a municipality or a private provider)* *4. Help with other activities (e.g. filling a drug dispenser)* *96. None of the above*

Table A2a. Baseline characteristics of parents aged 50+ in the analysis sample vs full sample from regular SHARE waves 1-9

	Analysis sample (N = 42,697)		**Pooled SHARE waves (N = 122,696)**	
	N	%	N	%
Age group				
50-59	13,759	32.8	41,766	34.1
60-69	14,768	35.2	41,263	33.7
70-79	9,803	23.4	27,494	22/5
80-84	3,631	8.7	11,827	9.7
Gender				
Male	18,305	42.9	54,171	44.2
Female	24,392	57.1	68,525	55.9
Education				
Primary or lower	8,746	20.7	27,227	22.5
Lower secondary	7,280	17.3	21,342	17.7
Upper/postsecondary	17,208	40.8	48,001	39.7
College or higher	8,945	21.2	24,308	20.1
Marital status				
Married/registered partnership	31,219	73.8	87,616	74.5
Never married	740	1.7	2,029	1.7
Separated/divorced	4,054	9.6	10,635	9.0
Widowed	6,305	14.9	17,343	14.7
Homeownership				
Yes	32,965	77.2	89,429	72.9
No	9,732	22.8	33,267	27.1
Region				
Western Europe	14,480	34.1	40,430	34.7
Central and Eastern Europe	9,960	23.4	32,479	27.9
Northern Europe	10,889	25.6	22,753	19.5
Southern Europe	7,155	16.8	20,753	17.8

Table A2b. Baseline characteristics of non-parents aged 50+ in the analysis sample vs full sample from regular SHARE waves 1-9

	Analysis sample (N = 4,239)		**Pooled SHARE waves (N = 11,155)**	
	N	%	N	%
Age group				
50-59	1,595	38.1	5,626	40.9
60-69	1,263	30.2	3,860	28.1
70-79	877	21.0	2,574	18.7
80-84	449	10.7	1,683	12.3
Gender				
Male	2,042	48.2	6,663	48.3
Female	2,197	51.8	7,124	51.7
Education				
Primary or lower	906	21.6	3,075	22.7
Lower secondary	665	15.9	2,270	16.7
Upper/postsecondary	1,669	39.9	5,177	38.2
College or higher	946	22.6	3,036	22.4
Marital status				
Married/registered partnership	1,632	38.8	5,225	39.6
Never married	1,773	42.1	5,289	40.1
Separated/divorced	335	8.0	1,086	8.2
Widowed	469	11.1	1,581	12.0
Homeownership				
Yes	2,857	67.4	8,685	63.0
No	1,382	32.6	5,102	37.0
Region				
Western Europe	1,827	43.3	5,701	43.2
Central and Eastern Europe	649	15.4	2,579	19.5
Northern Europe	899	21.3	2,064	15.6
Southern Europe	842	20.0	2,859	21.7

Table A3a. Multinomial logistic regression of destination state on selected sociodemographic covariates, among parents from the state of independent private home living

	To home-based care	To co-residence with a child	To a nursing home	Dead
	Base category: stay in independent private home living			
Age²	1.001***	1.002***	1.001*	1.003***
	(0.0002)	(0.0002)	(0.0007)	(0.0003)
Age	0.915*	0.721***	0.93	0.756***
	(0.032)	(0.022)	(0.103)	(0.029)
Female	1.445***	0.852***	1.100	0.484***
	(0.061)	(0.021)	(0.133)	(0.026)
Education				
Primary or lower	Ref	Ref	Ref	Ref
Lower secondary	0.939	0.898	1.089	1.264**
	(0.071)	(0.060)	(0.187)	(0.104)
Upper secondary	0.967	0.781***	0.695*	1.012
	(0.064)	(0.048)	(0.120)	(0.077)
College or higher	1.117	0.851*	0.691	0.719***
	(0.081)	(0.060)	(0.143)	(0.065)
Homeowner	0.756***	1.152*	0.385***	0.89
	(0.038)	(0.068)	(0.050)	(0.056)
Number of children	1.037*	1.136***	0.962	1.086***
	(0.019)	(0.021)	(0.048)	(0.022)
Region				
Western Europe	Ref	Ref	Ref	Ref
Central Europe	0.469***	1.318***	1.185	2.033***
	(0.034)	(0.084)	(0.203)	(0.155)
Northern Europe	0.445***	0.477***	0.712*	1.415***
	(0.026)	(0.034)	(0.111)	(0.102)
Southern Europe	0.876	1.827***	0.386***	1.747***
	(0.065)	(0.126)	(0.106)	(0.156)
Period (<= 2007)	3.36e-09***	0.334***	1.571**	6.08e-09***
	(0.0000)	(0.0267)	(0.2510)	(0.0000)

Odds ratio; clustered standard error in parentheses
* p < .05; ** p < .01; *** p < .001
Ref = reference category

Table A3b. Multinomial logistic regression of destination state on selected sociodemographic covariates, among non-parents from the state of independent private home living

	To home-based care	**To co-residence with a child**	**To a nursing home**
	Base category: stay in independent private home living		
Age²	1.001**	1.002	1.002***
	(0.0005)	(0.0010)	(0.0006)
Age	0.899	0.893	0.814*
	(0.063)	(0.132)	(0.072)
Female	1.124	0.950	0.543***
	(0.122)	(0.237)	(0.081)
Education			
Primary or lower	Ref	Ref	Ref
Lower secondary	1.139	1.278	0.992
	(0.213)	(0.466)	(0.221)
Upper secondary	0.815	0.782	0.775
	(0.133)	(0.292)	(0.164)
College or higher	0.949	1.177	0.520*
	(0.164)	(0.447)	(0.138)
Homeowner	0.901	0.323***	0.850
	(0.113)	(0.077)	(0.151)
Region			
Western Europe	Ref	Ref	Ref
Central Europe	0.522**	1.371	2.866***
	(0.119)	(0.540)	(0.654)
Northern Europe	0.627**	0.732	1.585*
	(0.094)	(0.234)	(0.339)
Southern Europe	0.887	1.363	2.419***
	(0.146)	(0.475)	(0.540)
Period (<= 2007)	3.22e-08***	1.109	6.68e-08***
	(0.000)	(0.344)	(0.000)

Odds ratio; clustered standard error in parentheses
* p < .05; ** p < .01; *** p < .001
Ref = reference category

Table A3c. Multinomial logistic regression of destination state on selected sociodemographic covariates, among parents from the state of co-residence with an adult child

	To independent private home living	To home-based care	To a nursing home	Dead
	Base category: stay in co-residence with a child			
Age²	0.998***	0.999	1.001	1.001**
	(0.0002)	(0.0006)	(0.0008)	(0.0003)
Age	1.252***	1.264**	0.986	0.960
	(0.038)	(0.111)	(0.125)	(0.049)
Female	0.929**	1.303	0.901	0.543***
	(0.026)	(0.186)	(0.208)	(0.051)
Education				
Primary or lower	Ref	Ref	Ref	Ref
Lower secondary	1.204**	1.492	1.115	0.956
	(0.082)	(0.336)	(0.353)	(0.132)
Upper secondary	1.383***	1.115	0.663	0.871
	(0.090)	(0.244)	(0.229)	(0.127)
College or higher	1.590***	1.948**	0.380	0.643*
	(0.119)	(0.481)	(0.221)	(0.124)
Homeowner	1.041	1.049	0.574	0.772*
	(0.059)	(0.196)	(0.173)	(0.090)
Number of children	1.048**	1.105*	0.885	1.013
	(0.019)	(0.050)	(0.112)	(0.036)
Region				
Western Europe	Ref	Ref	Ref	Ref
Central Europe	0.692***	0.222***	0.470*	1.188
	(0.044)	(0.051)	(0.175)	(0.174)
Northern Europe	1.271***	0.210***	1.256	1.782***
	(0.090)	(0.059)	(0.446)	(0.285)
Southern Europe	0.552***	0.323***	0.316**	0.934
	(0.035)	(0.063)	(0.121)	(0.143)
Period (<= 2007)	2.241***	1.70e-08***	0.856	5.70e-08***
	(0.129)	(0.000)	(0.373)	(0.000)

Odds ratio; clustered standard error in parentheses
* p < .05; ** p < .01; *** p < .001
Ref = reference category

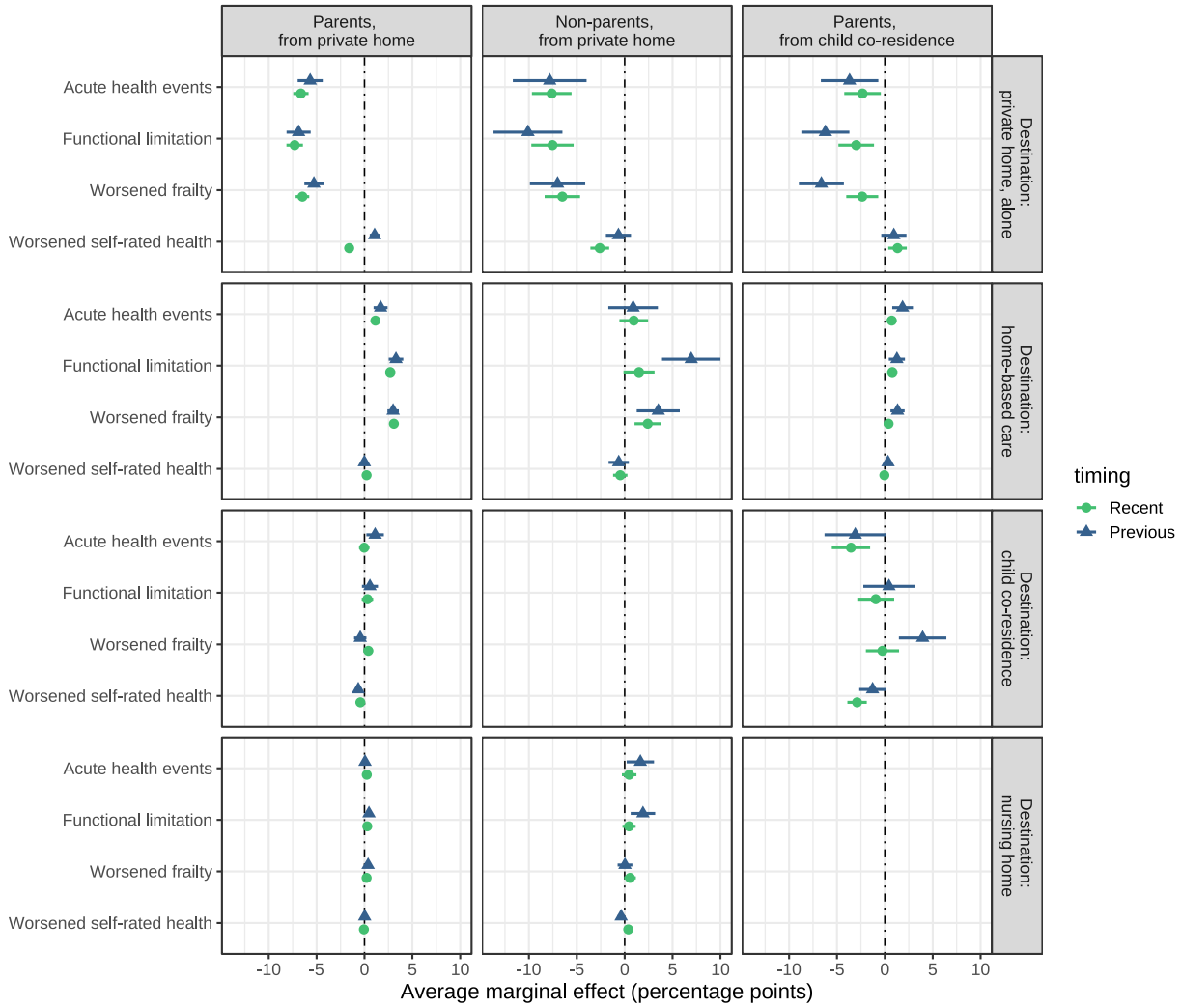
Computation of inverse probability weights

Sample attrition may be due to unit non-response and selective mortality. To account for sample attrition, we compute and apply inverse probability weights (IPW) to our models. For each wave, we estimate a logistic model that regresses the inclusion of the observation in the sample at wave *t+1* on known covariates of sample attrition, conditional on having participated at wave *t.* These covariates include age (in single years), sex (1 – male; 2 – female), education level (1 – primary or lower, 2 – lower secondary, 3 – upper secondary, college or higher), marital status (1 – married/registered partnership; 2 – never married; 3 – separated/divorced; 4 – widowed), number of children, and country of residence. Based on these models, we estimate the IPW for individual *i* simply as the inverse of the predicted probability of inclusion in the sample:

$$w_i = \frac{1}{P(I_i = i|\boldsymbol{X}_i)}$$

Sensitivity analysis 1: accounting for attrition

Figure A1a. Average marginal effects of health decline on selected transitions, generated from **unweighted models**



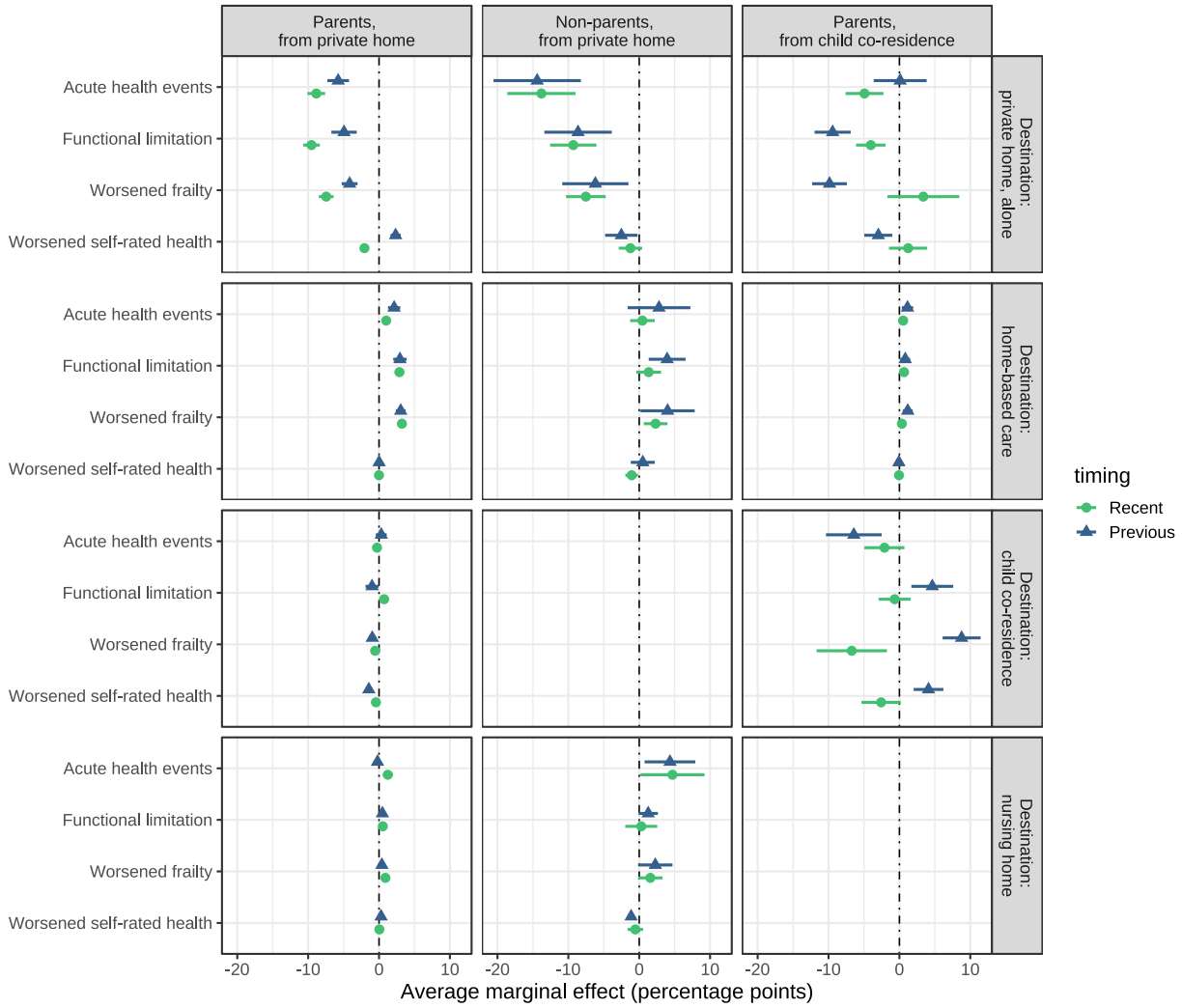
Notes:

Estimates are from separate multinomial logit models for each health indicator, controlling for age and age^2, sex, education, marital status, number of children (for parents), homeownership status, and region (coefficients not shown).

Parents' transition from child co-residence to a nursing home is excluded due to low sample size.

Sensitivity analysis 1: accounting for attrition

Figure A1b. Average marginal effects of health decline on selected transitions, generated from **inverse probability-weighted models**



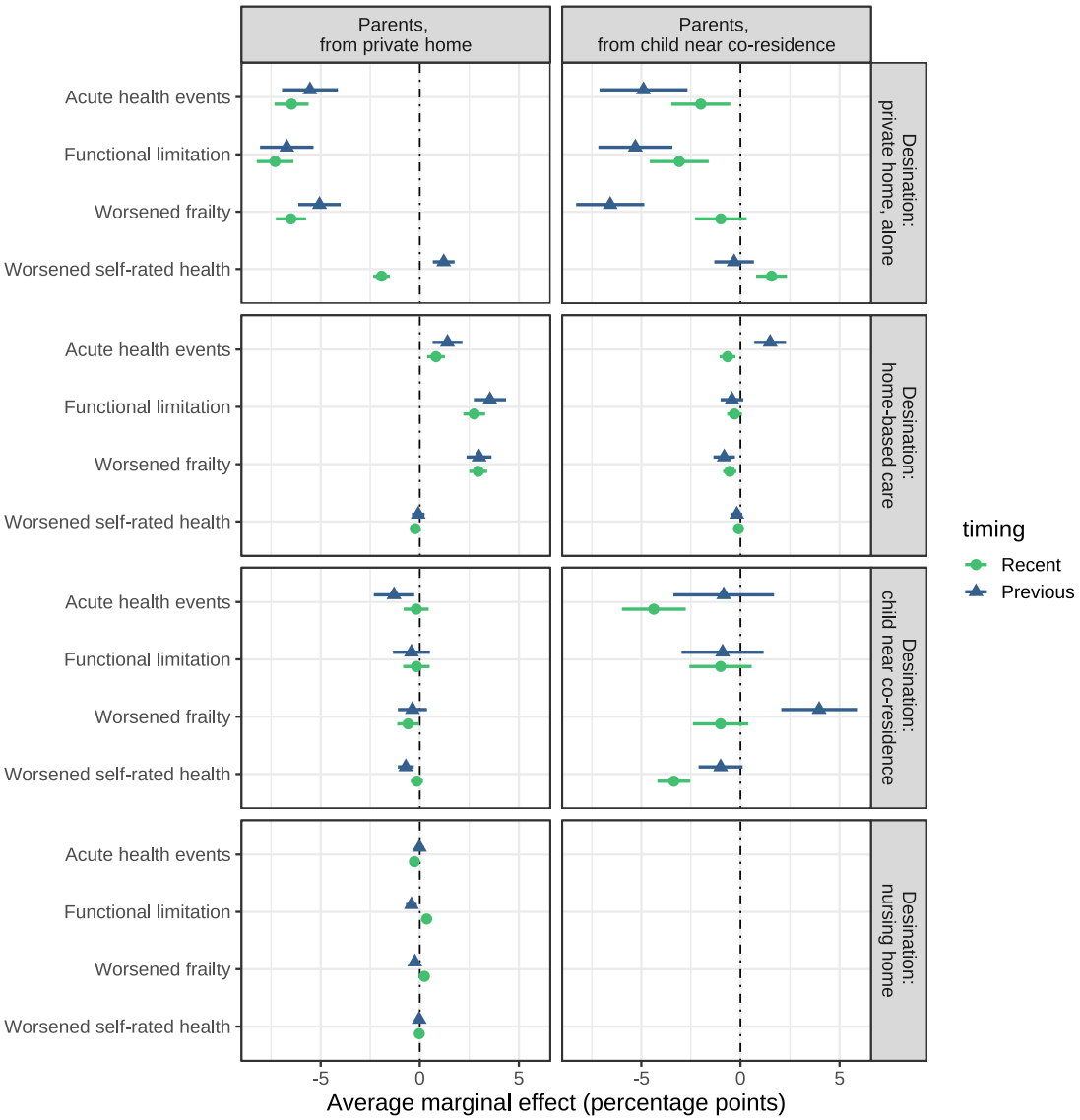
Notes:

Estimates are from separate multinomial logit models for each health indicator, controlling for age and age^2, sex, education, marital status, number of children (for parents), homeownership status, and region (coefficients not shown).

Parents' transition from child co-residence to a nursing home is excluded due to low sample size.

Sensitivity analysis 2: near co-residence

Figure A2. Average marginal effects of health decline on selected transitions for parents, incorporating near co-residence (co-living in the same apartment or building) as a state



Notes:

Estimates are from separate multinomial logit models for each health indicator, controlling for age and age^2, sex, education, marital status, number of children (for parents), homeownership status, and region (coefficients not shown).

Parents' transition from child co-residence to a nursing home is excluded due to low sample size.

Sensitivity analysis 3: end-of-life formal care use

Table A4a. Association between recent health decline and formal care use among surviving vs eventually deceased parents in the analysis sample

Health decline	**Receiving home-based care**		**Receiving care in a nursing home**	
	Deceased	**Surviving**	**Deceased**	**Surviving**
Any health event	1.272**	3.194***	1.332*	3.104***
	(0.111)	(0.171)	(0.171)	(0.386)
Functional limitation	1.18**	4.442***	1.576***	4.418***
	(0.105)	(0.171)	(0.199)	(0.499)
Worsened frailty	0.96	2.558***	1.003	1.299
	(0.093)	(0.130)	(0.150)	(0.201)
Worsened self-rated health	1.077	1.409***	0.972	1.158
	(0.078)	(0.055)	(0.110)	(0.115)

Unadjusted odds ratio; standard error in parentheses
* p < .05; ** p < .01; *** p < .001

Sensitivity analysis 3: end-of-life formal care use

Table A4b. Association between recent health decline and formal care use among surviving vs eventually deceased non-parents in the analysis sample

Health decline	**Receiving home-based care**		**Receiving care in a nursing home**	
	Deceased	**Surviving**	**Deceased**	**Surviving**
Any health event	1.055	3.296***	2.56**	2.050**
	(0.287)	(0.472)	(0.832)	(0.550)
Functional limitation	1.203	3.198***	0.825	5.492***
	(0.310)	(0.457)	(0.319)	(0.107)
Worsened frailty	1.005	2.321***	1.556	1.531
	(0.291)	(0.315)	(0.573)	(0.398)
Worsened self-rated health	0.922	1.312**	0.969	1.167
	(0.196)	(0.131)	(0.290)	(0.208)

Unadjusted odds ratio; standard error in parentheses
* p < .05; ** p < .01; *** p < .001