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Research Article

Proximity to mother over the life course in the United States: Overall patterns and racial differences

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Contents

1	Introduction	770
2	Literature and hypotheses	772
2.1	Life course aspects of residential mobility, living arrangements, and intergenerational proximity	773
2.2	Racial differences in intergenerational proximity and associated factors	774
3	Methods	776
3.1	Data and sample	776
3.2	Measures	778
3.3	Analytic approach	779
4	Results	781
4.1	Life course patterns of proximity to mother and expected life years at a given proximity	781
4.1.1	The share of children at each proximity level (static patterns)	781
4.1.2	Median distance to mother	785
4.2	Change in proximity to mother over the life course (dynamic patterns)	787
5	Discussion	791
	References	795
	Appendices	804

Proximity to mother over the life course in the United States: Overall patterns and racial differences

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Abstract

BACKGROUND

The spatial distance between children and parents substantially influences their lives, yet empirical evidence on life course patterns of child–parent proximity is sparse.

OBJECTIVES

The goal of this study is to identify salient features of child–parent spatial distance across the life course and explain differences by race in these features in the United States.

METHODS

Using the Panel Study of Income Dynamics, this study examines the spatial distance between residential locations of children and their mothers over 47 years (166,098 person-year observations). Point-in-time, dynamic, and multi-state life table analyses of spatial distance are conducted using location measured at the block level. Differences between Black and White people are assessed, examining various explanatory factors, including life course events.

RESULTS

Living very close is common across the life course, with 25% of life-years during ages 18–54 spent within five miles of, but not with, one’s mother. Children who are Black are much more likely than children who are White to live close to their mother if she is alive, but mothers of Black children are much less likely to be alive, especially when children

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are middle-aged. Observed sociodemographic characteristics of the child and mother account for a substantial share – and in some cases all – of the racial differences.

CONCLUSIONS

Very close residential proximity to one's mother beyond coresidence is common across the life course even in the geographically large United States. Racial differences in mortality affect differences between Black and White people in family spatial availability.

CONTRIBUTION

This study provides the first national estimates of intergenerational proximity over the life course in the United States, and hence a basis for further research.

1. Introduction

Family members provide support and assistance to each other across the life course, which is facilitated by living in close proximity. Spatial proximity is strongly associated with assistance with household chores (Mulder and van der Meer 2009), the frequency of intergenerational contact (Hank 2007; Lawton, Silverstein, and Bengtson 1994; Shelton and Grundy 2000; Spitze and Logan 1990), in-person visits (Rossi and Rossi 1990), childcare received from grandparents (Fuller-Thomson and Minkler 2001; Heylen et al. 2012), and the amount of help provided to aging parents and relatives (Joseph and Hallman 1998; Litwak and Kulis 1987; Rossi and Rossi 1990). Having relatives nearby also influences labor market outcomes (Coate 2013; Coate, Krolikowski, and Zabek 2017; Compton and Pollak 2014), migration decisions (Dawkins 2006; Longino et al. 2008; Spilimbergo and Ubeda 2004; Zorlu 2009), and nursing home entry and use of formal care following a decline in health (Choi et al. 2015a; van der Pers, Kibele, and Mulder 2015).

The strength of the relationship between spatial distance and the amount of support provided varies by the type of support. Family members can and do have significant interaction even if they live far from each other, made possible in part by technology that can help overcome spatial distance (Baldassar 2016; Benefield and Beck 2007; Litwak and Kulis 1987) or by providing support in ways that may not be as contingent on proximity, like financial assistance (Koerin and Harrigan 2003; Mazanec 2012; Wilkening, Guerrero, and Ginsberg 1972). However, research has consistently found that support, especially support requiring in-person interaction, is much greater among family members living in close proximity (Choi et al. 2015a; Compton and Pollak 2014). Moreover, in-person care is substantially lower between family members who live only a modest distance farther from each other: The rate of daily contact with an older person's

helper falls from 85% with a helper who lives on the same block to 44% with a helper who lives 2–5 blocks away (Litwak and Kulis 1987). Fine granularity in measures of proximity, which is rare in the literature, is important for a full understanding of the implications of spatial distance for the type and amount of family support and interaction.

Substantial heterogeneity in child–parent residential proximity has been found in the United States and other countries across sociodemographic groups and residential areas (Blaauboer, Mulder, and Zorlu 2011; Choi et al. 2020; Isengard 2013; van den Broek and Dykstra 2017; van der Pers and Mulder 2013). Couples tend to live closer to the man’s parents than to the woman’s parents (Blaauboer, Mulder, and Zorlu 2011). Children with a sibling are less likely than only children to be coresident with a parent but not necessarily more likely to live at a great distance (van den Broek and Dykstra 2017). Children and parents with higher education are more likely to live far from each other than those with lower education (Choi et al. 2020; Compton and Pollak 2015; Malmberg and Pettersson 2008). Adults in non-metro areas are less likely to have their adult children coresident or close (Choi et al. 2020). The distance between a parent and employed child is smaller if the parent lives in an area with a strong economy (van den Broek, Dykstra, and Schenk 2014).

In the United States there are substantial racial differences in the rate of coresidence with and proximity to a family member. Black individuals are much more likely to live with or closer to their parents and adult children than White individuals (Bianchi, McGarry, and Seltzer 2010; Burr and Mutchler 1999; Choi et al. 2020; Compton and Pollak 2015; Kamo 2000; Matsudaira 2016; Reyes, Schoeni, and Choi 2020; Wiemers et al. 2017). However, little evidence exists on how the family proximity of Black and White people differs across life stages. Potential factors influencing family proximity, such as the completion of education, marriage, parenting, health decline, and death, are likely to occur at different life stages and at different rates for Black individuals and White individuals. Racism plays an important role in racial disparities in socioeconomic and health status (Chae et al. 2015; Han 2018; Mangino 2019; Raley, Sweeney, and Wondra 2015; Simons et al. 2021) and hence likely contributes to racial differences in family spatial proximity. Examining the influence of life course events on proximity at each life stage will provide valuable insights into the potential source of racial disparity in family proximity.

The current study addresses gaps in the evidence on intergenerational proximity over the life course using national data that follows a cohort of US children born in the years 1951–1968 and their mothers for nearly half a century. Findings from the study complement emerging data on life course aspects of intergenerational residential proximity (Kolk 2017; Michielin and Mulder 2007; Mulder and Kalmijn 2006). First, besides examining the static patterns of proximity over the life course, the current study provides dynamic patterns of the intergenerational proximity and dyadic mobility that

underly the dynamic process. With locational data on both parents and children, the study was able to identify the party – adult children or their parents, or both – who drives the change in intergenerational proximity. Second, the study also explores the extent to which parents' mortality influences the estimates of spatial availability of family. The spatial availability of a parent may be low because the parents live far away or because the parents are deceased. Including children whose parents are deceased in the analysis of family spatial proximity is especially important when assessing differences between the respective proximity of Black and White individuals because of large racial gaps in mortality. The parents of the Black children examined in this study experienced systemic racial residential segregation caused by government housing programs, home financing policies, and zoning restrictions (Rothstein 2017), which contributed to limited opportunity for higher education, employment, home ownership, and other socioeconomic advancement. These socioeconomic factors, together with stress from racism, proximity to toxic environments, and limited access to healthcare, may have caused substantially greater mortality rates among Black individuals than White individuals. Hence, we present estimates of proximity both including and excluding children whose parents have died, which provide important perspectives regarding spatial availability of parents. Third, the study is also unique in its use of national data with unusually fine granularity regarding proximity, revealing that many adult children live very close to their mothers, including on the same block. Lastly, by examining the influence of potential explanatory factors, including life course events, on racial differences in proximity, the study provides important insights into heterogeneity in the life course patterns of the proximity of children to their mother.

2. Literature and hypotheses

Our research builds on two distinct areas of the literature. First, we consider prior studies on residential mobility, living arrangements, and family residential proximity that provide insights into the life course pattern of intergenerational proximity. Second, given our focus on racial differences in spatial proximity over the life course, we describe findings on racial differences in migration and proximity patterns and in potential factors influencing the migration and proximity.

2.1 Life course aspects of residential mobility, living arrangements, and intergenerational proximity

Change in spatial distance between children and their parents is determined by residential relocation, which is high in young adulthood and relatively steady at middle and older ages (Geist and McManus 2008; Greenwood 1997). Accordingly, life course patterns of intergenerational proximity are heavily influenced by life course events such as college enrollment, labor market entry, family union formation and dissolution, childbearing, retirement, and health challenges (Choi et al. 2015b; Clark and Withers 2007; Geist and McManus 2008; Greenwood 1997; Machin, Salvanes, and Pelkonen 2012; Molloy, Smith, and Wozniak 2011; Rossi 1980; Speare, Avery, and Lawton 1991; Wozniak 2010). Geographic proximity between family members may also reflect an opportunity structure of family relationships (Silverstein and Bengtson 1997) to facilitate various functional roles played by extended family members, such as childcare by grandparents and caregiving for aging parents. Evidence suggests that those who relocate are more likely to move to a census tract where their parents live (Spring et al. 2017).

Previous research has suggested distinctive life stages, each of which is associated with specific life course events influencing child–parent proximity (Lin and Rogerson 1995; Litwak and Longino 1987). Young adulthood often marks a child’s first move away from the parental home. The timing of moving out of the parental home occurs earlier for women and for those with higher incomes (Aassve et al. 2002; Goldscheider and DaVanzo 1985; Mulder and Clark 2000). The most common motivations for leaving the parental home are marriage and employment (Goldscheider and Goldscheider 1997). Moves are often short-distance, with just 15% of all home-leavers migrating across state lines in the United States (Mulder and Clark 2000). Higher education, however, may result in an initial long-distance move away from one’s parents, especially for higher-income groups (Greenwood 1997). As children get married and establish their own families, these life course transitions may influence their preference for being near family. Adult children who are married or have their own children tend to live closer to their mothers (Bianchi, McGarry, and Seltzer 2010; Lin and Rogerson 1995; Rogerson, Weng, and Lin 1993). Adult children who themselves are parents can benefit from childcare provided by their parents if they live close by. For example, research has found that women with young children living near their own parents have a higher rate of participation in the labor market (Compton and Pollak 2014).

In the later stage of the life course, intergenerational proximity is associated with parental life course transitions such as retirement, declining health, and loss of spouse (Lin and Rogerson 1995; Litwak and Longino 1987). For example, empirical research examining proximity changes following a decline in a parent’s health has found a reduction in the parent’s distance from the child (Choi et al. 2015b; Litwak and Longino 1987; Rogerson, Burr, and Lin 1998; Silverstein 1995), although research examining the

static relationship between mother's poor health and proximity did not find the association (Bianchi, McGarry, and Seltzer 2010). Older adults and their adult children collectively adjust proximity to facilitate mutual support, but more than two-thirds of all proximity-enhancing moves are made by adult children (Zhang, Engelman, and Agree 2013).

Based on a life course perspective of the residential mobility and intergenerational relationships documented above, we hypothesize that the distance from parents increases when children are aged 18–24 (young adulthood), primarily driven by children leaving the parental home, and continues to increase when children are aged 25–34 (pre-middle age) as they seek job opportunities and form their own family. We also expect that distance from parents becomes relatively stable at ages 35–44 (younger middle age), although parents' residential mobility may increase as parents retire. We hypothesize that the distance from a parent decreases when children are aged 45–64 and beyond (middle and older ages) as the parent loses independence because of declining health and death of their spouse.

2.2 Racial differences in intergenerational proximity and associated factors

Differences between Black and White individuals in intergenerational coresidence and proximity have been consistently documented in the literature. Black people have higher rates of coresidence between parents and their adult children than White people overall (Bianchi, McGarry, and Seltzer 2010; Burr and Mutchler 1999; Compton and Pollak 2015; Kamo 2000) and across life stages (Matsudaira 2016; Wiemers et al. 2017). Black people are also more likely to live close to their mother than White people (Bianchi, McGarry, and Seltzer 2010; Choi et al. 2020; Compton and Pollak 2015). However, little is known about differences between Black and White individuals in the life course patterns of intergenerational proximity beyond coresidence.

Stability and change in intergenerational proximity are determined by residential relocations by children or by parents. Substantial differences in migration patterns by race would contribute to differences in patterns of intergenerational proximity by race. Black people have higher rates of moving than White people, although the difference is much smaller at greater distances (Spring, Tolnay, and Crowder 2016). However, once the lower rate of home ownership among Black individuals is accounted for, Black individuals are less likely to move than White individuals and less able to translate mobility expectations into an actual move (Crowder 2001; South and Deane 1993). Black people are less likely than White people to move from cities to suburbs, and the residential segregation through discrimination may limit the neighborhood choices available to Black people and increase proximity to other Black people, including their

family (South and Crowder 1997). Among those who move away, Black people are more likely than White people to return to their origin even after accounting for other determinants of migration (Wilson et al. 2009). Racial discrimination and preference to live near those of the same race may contribute to differences between Black and White people in return migration, as the concentration of Black people in a state reduces out-migration and attracts Black migrants (Frey et al. 2005). Lower economic returns to migration for Black men relative to White men may also contribute to fewer long-distance moves for Black people (Leibbrand 2020). Racial discrimination in government housing and related policies have limited the locations where Black individuals can choose to live (Rothstein 2017).

Racial differences in college enrollment, labor market entry, family union formation and dissolution, childbearing, and health may explain the substantial racial gap in migration patterns, and hence spatial proximity to family over the life course. For example, the lower rate of marriage among Black people vs. White people contributes to the substantially higher rate of living with their parents among Black than White individuals (Reyes, Schoeni, and Choi 2020). Lower education among Black vs. White individuals contributes to closer family proximity beyond coresidency among Black individuals than White individuals in the United States (Reyes, Schoeni, and Choi 2020). Many of these differences in demographic, socioeconomic, and health factors can be at least in part attributed to the racial discrimination and institutional racism experienced by Black people across the life course. For instance, income segregation between school districts contributed to racial disparities in school quality and student's achievement (Owens 2018). These limited educational opportunities, combined with lower returns to educational attainment for Black individuals (Mangino 2019), may lead to Black individuals having fewer opportunities or less motivation to move away from family than White individuals. Black people face a substantially greater risk of incarceration and long-term unemployment than White people, even after controlling for standardized test scores and socioeconomic status (Han 2018). Black women are more likely to have a child outside marriage (Martin et al. 2015; Smock and Greenland 2010). Economic disadvantage is an important factor explaining the lower rate of marriage and marital stability among Black couples (Raley, Sweeney, and Wondra 2015). Black individuals have poorer health and higher mortality than White individuals (Daw, Verdery, and Margolis 2016; Umberson et al. 2017; Williams et al. 1997). Persistent exposure to discrimination is an important predictor of higher rates of chronic disease (Simons et al. 2021) such as hypertension, diabetes, and stroke among Black individuals, which suggests that Black individuals acquire age-related conditions prematurely (Thorpe et al. 2016) and have greater mortality (Chae et al. 2015).

Compared to White people, Black people may also have stronger cultural expectations and preferences for remaining close to family (Burr and Mutchler 1999; Lee,

Peek, and Coward 1998; Spilimbergo and Ubeda 2004). While family attachment is negatively related to residential mobility for all racial groups, this association is four times larger for Black people than for White people (Spilimbergo and Ubeda 2004). Such an attachment to the extended family may reflect a stronger reliance on kin networks among Black individuals due to their historical disadvantages. Research has also found that Black people have stronger norms and expectations of filial responsibility than White people, including support through intergenerational coresidence (Burr and Mutchler 1999; Lee, Peek, and Coward 1998). Black individuals and White individuals have different patterns of family support: Black individuals are more involved in instrumental support while White individuals are more involved in financial and emotional support (Sarkisian and Gerstel 2004). The socioeconomic structure explains most of the differences in family support between Black and White individuals, although cultural differences may also contribute to some extent (Sarkisian 2007; Sarkisian and Gerstel 2004).

Based on the literature above, we hypothesize that, compared to White individuals, Black individuals live closer to their mothers at all life stages because the need for instrumental support from extended family members is greater, the labor market benefits of long-distance moves are smaller, and racial discrimination in housing limits geographic mobility. We expect that a substantial portion of the gap between Black and White individuals in proximity to mother is explained by the key socioeconomic (e.g., marital status, education, financial status, employment status, home ownership) and health differences discussed above – but not all of the gap, because of unobserved factors such as stronger kin-network preferences among Black people and racial discrimination in housing location. In terms of dynamic patterns of proximity, it is not clear whether distance from the mother is more stable for Black or for White individuals across the life stages. The relatively greater propensity of Black people to provide instrumental support would lead to greater stability in proximity among Black people, especially discouraging a move leading to a long distance from a family member. However, home ownership is less common among Black individuals than White individuals, which may increase residential mobility and hence create less stability in family proximity for Black individuals.

3. Methods

3.1 Data and sample

The Panel Study of Income Dynamics (PSID) is a nationally representative sample that included 18,233 individuals from 4,802 families in the United States when it began in

1968 (Beaule et al. 2017). Information about these individuals has been collected continuously, representing the longest-running national longitudinal household survey in the world. Detailed residential location information (at the block level) for all individuals in the PSID at each survey wave is available to researchers under a restricted data use agreement.

The total number of children under age 18 known to be living with their biological or adoptive mother (henceforth ‘mother’) in 1968 is 6,022, contributing 173,789 person-year observations over a 47-year follow-up period between 1968 and 2015.⁵ After dropping 7,691 person-year observations (or 4.4%) that had missing information on mother’s vital status or spatial proximity in a given year after 1968, the sample comprised 166,098 person-year observations. We refer to this sample as the “1968 children.” Some analyses further restrict the sample to children whose mother is known to be alive in a given year, resulting in a sample of 151,575 person-year observations. We refer to this sample as the “1968 children whose mother is alive in a given year” (Appendix Table A–1).

For multivariable analyses to examine racial differences in proximity to the mother, we further restricted the sample to years in which the child was a PSID head or spouse and 25 years or older because many key life course variables are available only in these years and/or for head or spouse. In other words, both children and their mothers are a PSID head or spouse in these years. The PSID assigns a separate family unit for children who moved out of the parental home but subsequently moved back in with their parents. Therefore, only those who never left their parent’s home do not become a head or spouse of a PSID family unit and are excluded from the multivariable analyses. This restriction results in 52,817 person-year observations for the analysis with the static, point-in-time proximity outcome (i.e., proximity level), and 52,591 person-year observations for the analysis with the dynamic proximity outcome (i.e., change in proximity level over time). About 6% of the observations are missing in covariates for the multivariable model with the static outcome and 10% are missing in covariates for the multivariable model with the dynamic outcome, resulting in 49,397 person-year observations for the static model and 47,153 person-year observations for the dynamic model. For the analyses with health as a covariate, we examine the sample at ages 35 and older because self-rated health measures were only available starting in 1984.

⁵ To determine biological/adoptive relationship between children and their mother in 1968 we used the PSID’s Family Identification Mapping System (FIMS), which allows users to identify all 1968 children and their biological mother as long as the mother was interviewed sometime after 1984. Based on FIMS and their 1968 household identifier, we identified 6,022 children who lived with their biological/adoptive mother. There were 8,504 children under 18 in the 1968 PSID, and 8,090 were living with their biological mother, adoptive mother, stepmother, or coresiding female partner of the household head. Appendix Table A-1 shows that the socioeconomic characteristics of the former (N = 8,090) and later (N = 6,022) groups of children are very similar. Moreover, the weighted percentage in each proximity category is similar for the sample of biological/adoptive mothers (Table 1) and all types of mother (Supplementary Table S-1).

3.2 Measures

The primary outcome of interest is spatial proximity to one's mother. When the residential location of noncoresident family members is collected in national surveys, it is almost always reported by the focal person and not by the nonresident family members themselves. Furthermore, this information is not reported with great precision, e.g., Zip code or city/state, or whether they live within 10 miles of the focal person. By contrast, in the PSID the households of both the child and the mother are interviewed, and the PSID provides researchers with the census block of residence, which tends to be quite small in size. For example, the average size of blocks where PSID children in our sample lived in 1968 is 0.29 square miles, and 92% lived in a block smaller than 1 square mile. Based on this location information, we calculated the distance between the centroids of census blocks of 1968 children and their mothers using the great circle distance formula (Picard 2010).

We use two measures of proximity: categorical and semi-continuous. The categorical measure of proximity consists of 11 categories: (1) coresident, (2) not coresident but on the same block, (3) not on the same block but within 1 mile, (4) 1–5 miles, (5) 5–10 miles, (6) 10–30 miles, (7) 30–100 miles, (8) 100–200 miles, (9) 200–500 miles, (10) >500 miles, and (11) mother is not alive. The lower limit of each category was exclusive, and the upper limit was inclusive. For example, 10–30 miles means that greater than 10 miles (>10) but less than or equal to 30 miles (≤ 30). The categorical measure used in the analysis for the sample of 1968 children whose mother is alive in a given year contains these categories 1 through 10. Coresidence and vital status were determined using the family roster (i.e., having the same household identifier) and information on the death of sample persons collected by the PSID. A second, semi-continuous measure of proximity is used for some of the analyses conducted on the sample of 1968 children whose mother is alive in a given year. This measure consists of three mutually exclusive segments: (1) coresident, (2) not coresident but on the same block, and (3) distance from mother in miles. Those who were living away from home in an educational institution at the time of interview (about 9% of those aged 18–24 in our analysis sample) are considered as coresident.

To examine the dynamic patterns of proximity to the mother, we constructed a measure of change in proximity based on the semi-continuous measure (change of any distance, at least 5 miles, at least 30 miles, at least 100 miles). All estimates of change are expressed as annual (i.e., 365-day) rates using the exact date of the interview.

We provide estimates of the continuum of spatial proximity over the life course but also create several age categories to examine the proximity estimates specific to each life stage based on the family development cycle discussed above: 17 years and younger (dependent childhood and adolescence), 18–24 (young adulthood), 25–34 (pre-middle ages), 35–44 (younger middle ages), 45–54 (middle ages), and 55–64 (older middle ages).

Another key independent variable is race of the focal person (i.e., an indicator of children who are Black), given our interest in the difference between Black and White individuals in life course patterns of family proximity. We only focus on individuals who are identified as Black or White because they represented 99% of children in the United States in 1968 (National Center for Health Statistics, n.d.). In our 1968 children sample, 97% are either Black or White individuals.

Multivariable analyses assess the extent to which demographic, socioeconomic, and health factors influence racial differences in proximity. For the static model, demographic factors include the child's gender, the number of children the mother has (1, 2, 3, 4, and 5+), age and marital status of the child and mother (married, never married, widowed, divorced, and separated), and metropolitan status of the areas where the child and mother reside. The child's and mother's education (<12, 12, 13–15, and 16+), employment status (working, not working), home ownership status (own, rent, neither), and poverty ratio (family income to census poverty threshold) are included as socioeconomic covariates. The child's and mother's general health status (excellent, very good, good, fair, poor) are also included. Descriptive statistics of covariates included in the static model are reported in Supplementary Table S-2a. For the dynamic model examining change in proximity to mother we include life course events, i.e., change in each of the demographic, socioeconomic, and health status variables since the last interview. Gender, the number of children that the mother has, and education level rarely change after age 25, so these variables are included in the model as static status (i.e., level) rather than change. Descriptive statistics of covariates included in the dynamic model are reported in Supplementary Table S-3.

3.3 Analytic approach

We begin by presenting the frequency distributions of the 1968 children's spatial proximity to their mother at each life course stage. A kernel-weighted local polynomial smoothing technique is used to plot the life course patterns of child–mother proximity from child's age 0 to 64, following the 1968 children over 47 years (from 1968 to 2015). As an auxiliary analysis we also estimate the expected number of years children will spend at each level of proximity to their mother between 18 and 54 (over 36 years) based on multi-state life expectancies using age-specific transition probabilities⁶ (Laditka and Wolf 1998; Preston, Heuveline, and Guillot 2000; Schoen 2013). This analysis provides a complementary perspective to the life-stage analyses by reporting estimates of children's proximity to their mother cumulatively over a given lifespan, rather than at a

⁶ For the life-years analyses we restricted the sample to those observations that have interview intervals of less than two years.

point in time. Transition probabilities at each age are estimated using a multinomial logit model.⁷ Most analyses are reported for all children and separately for Black and White children in order to assess racial differences.

We also examine the extent to which demographic, socioeconomic, and health factors influence the racial gap in proximity to mother at each life stage. For the static models, we analyze distance to mother in miles. We use quantile regression models to assess differences in median distance, first including only race (Black or White children) and life stage (25–34, 35–44, 45–54, 55–64), and their interactions, then sequentially adding controls for demographic, socioeconomic, and health factors. For the dynamic outcome we analyze whether proximity changed between interview waves (change of any distance, at least 5 miles, at least 30 miles, at least 100 miles), and use four multinomial logistic models for each outcome, first including only race (Black vs. White children), age (25–34, 35–44, 45–54, 55–64), and their interactions, then sequentially adding controls for demographic, socioeconomic, and health events. We calculate differences between Black and White individuals in the predicted value of median distance to one's mother for the static outcome and in the predicted probability of reduced distance and increased distance for the dynamic outcome. A 95% confidence interval for each estimate of racial difference based on a robust standard error is also calculated to assess whether the predicted values are different by race within each life stage and across life stages.

There are a few sources of missing observations in the analysis sample. First, there are substantial reductions in the sample over the 47-year follow-up period due to the death of the child, attrition of children and mothers, and changes in the PSID sample inclusion criteria (e.g., PSID dropped some sample members in 1997). For example, the sample of 6,022 children in 1968 drops to 1,981 in 2015 (Supplementary Figure S-1). To adjust for these longitudinal sample attritions and design changes, we use longitudinal survey weights provided by the PSID. Second, 4.4% of the person-year observations (7,691 out of 173,789) are missing because the location of the child or their mother was not provided with sufficient precision (e.g., as a PO box) or the mother's vital status was not known in a given year after 1968. We dropped these observations from the analyses. Third, missing in at least one covariate contributes to the loss of about 6% of the person-year observations in the multivariable static model and 10% of the person-year observations in the multivariable dynamic model. We conducted sensitivity analyses for our multivariable analyses by imputing missing values in covariates using an iterative multivariable regression technique (Royston and White 2011).

⁷ We selected observations with one-year (e.g., before 1997 surveys) or two-year intervals (e.g., from 1997 surveys). To estimate transitions over one year for those with two-year intervals, we interpolated the missing interval by randomly assigning proximity status from a record either one year prior or one year after (e.g., for 1998 proximity status, which is missing for all PSID sample persons, we assigned the proximity status of either 1997 or 1999).

4. Results

4.1 Life course patterns of proximity to mother and expected life years at a given proximity

4.1.1 The share of children at each proximity level (static patterns)

Table 1 reports estimates of proximity to mother by broad age categories corresponding to life stages. At ages 18–24 the majority of 1968 children were coresident with their mother (57.1%), while an additional 6.0% lived on the same block, 3.7% within 1 mile but not on the same block, and 8.4% lived 1–5 miles away. Only 8.8% of 1968 children lived farther than 100 miles from their mother, and 2.4% did not have a living mother at these ages. Between the child's ages of 18–24 and 25–34, the share of 1968 children living with their mother dropped substantially to 13.7%, but nearly one-third lived within 5 miles but not with their mother. At the same time, the share of 1968 children living farther than 100 miles away rose substantially to 20.8%. At child's ages 35–44, 6.7% of 1968 children lived with their mother, but 24.8% lived within 5 miles but not coresident. A substantial share of 1968 children lived at least 500 miles from their mother (12.2%), or their mother had died (14.8%) at these ages. The share of 1968 children whose mother is dead rises dramatically between the child's ages 35–44, 45–54, and 55–64 (from 14.8% to 33.9% to 59.4%).

Table 1: Distance from child to mother, by the age of child (percentage in each proximity category)

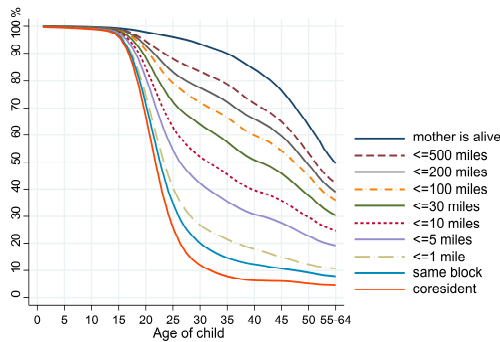
Age of children	Sample: 1968 children						Sample: 1968 children whose mother alive in a given year					
	<=17	18–24	25–34	35–44	45–54	55–64	<=17	18–24	25–34	35–44	45–54	55–64
Median distance	-	-	-	-	-	-	0.0	0.0	6.3	11.1	12.4	10.1
Coresident	98.1	57.1	13.7	6.7	5.5	3.8	98.6	58.5	14.6	7.9	8.3	9.4
Same block	0.2	6.0	8.2	6.0	4.0	2.1	0.2	6.1	8.8	7.1	6.1	5.1
0–1 mile	0.1	3.7	6.7	5.8	3.3	2.8	0.1	3.8	7.1	6.9	5.0	6.8
1–5 miles	0.2	8.4	15.1	13.0	10.9	7.2	0.2	8.6	16.1	15.3	16.5	17.7
5–10 miles	0.2	4.8	9.7	9.2	7.1	4.3	0.2	4.9	10.3	10.8	10.8	10.5
10–30 miles	0.2	4.9	11.6	11.3	8.3	4.7	0.2	5.0	12.3	13.2	12.6	11.5
30–100 miles	0.1	3.9	8.0	9.1	7.3	5.1	0.1	4.0	8.6	10.7	11.1	12.5
100–200 miles	0.2	2.2	5.1	5.9	4.5	2.4	0.2	2.3	5.5	6.9	6.8	6.0
200–500 miles	0.1	2.3	5.9	6.0	4.5	2.9	0.1	2.3	6.3	7.0	6.8	7.0
> 500 miles	0.2	4.3	9.8	12.2	10.6	5.5	0.2	4.4	10.5	14.3	16.0	13.5
No living mother	0.5	2.4	6.2	14.8	33.9	59.4	-	-	-	-	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N of observations	55,091	37,257	39,531	20,953	9,801	3,465	54,627	36,012	36,239	17,291	6,038	1,368

Survey years: 1968–2015 (PSID)

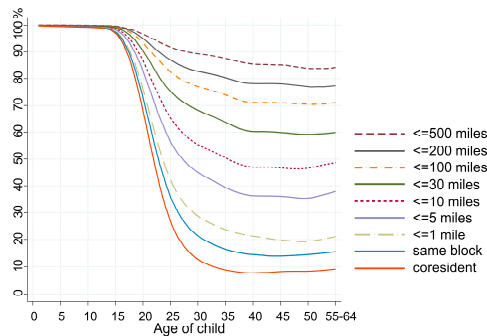
To better illustrate changes over the life course, Figure 1a presents kernel-weighted local polynomial smoothed estimates of the percentage in each proximity category across all ages using the sample of 1968 children. The share of children living with or very close (within 5 miles) to their mother declines rapidly in the late teens and early twenties, as children leave home seeking independence, education, and jobs. The share living with their mother becomes stable from about age 40, while the overall share living within 5 miles (including coresident) continues to decrease. The share of 1968 children living within 30 miles of their mother declines monotonically from the child's age of about 25 to 55–64.

Figure 1: Distance from child to mother by the age of child (Cumulative percentage in each proximity category)

a) Sample of 1968 children



b) Sample of 1968 children whose mother alive in a given year

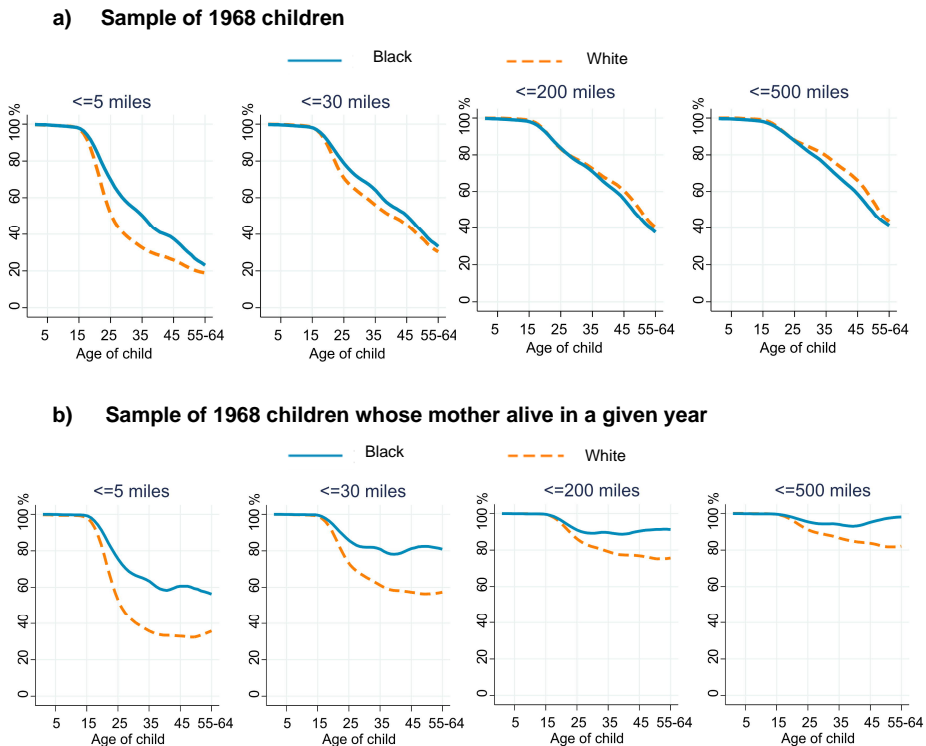


Survey years: 1968–2015 (PSID)

Conditional on 1968 children having a living mother (Table 1 right panel), the share of those living in the same house as their mother remains fairly high even at the middle and later life stages: 7.9% at child's ages 35–44, 8.3% at ages 45–54, and 9.4% at ages 55–64. The share of children non-coresident but living very close (within 5 miles) to the mother also remains high at child's ages 25 and older: 32.0% at ages 25–34, 29.3% at ages 35–44, 27.6% at ages 45–54, and 29.6% at ages 55–64. A substantial share of 1968 children whose mother is alive in a given year live more than 500 miles from their mother, especially during later life stages; the highest rate of 16.0% is at child's ages 45–54. Figure 1b presents kernel-weighted local polynomial smoothed estimates of the percentage in each proximity category using the sample of 1968 children whose mother is alive in a given year. The share of children living with their mother declines dramatically in the late teens and twenties and continues to decline until about the child's age of 35. The share living within 5 miles also falls steeply through the late twenties and continues to fall until about the child's age of 40. The share of children more than 500 miles away rises between the child's ages 18 and 45 and stays at about 15% after that.

There are substantial racial differences in spatial proximity to mother at all adult ages of the child. Among all 1968 children (including those whose mother had died), the proportion whose mother lived within five miles and within 30 miles was greater for Black children, but the proportion whose mother was within 200 miles and within 500 miles was not greater for Black children (Figure 2a). Furthermore, the racial differences that exist at the child's ages of 25–35 are much smaller or are eliminated by about the child's age of 50. For example, at age 30, Black children are about 20 percentage points more likely to live within 5 miles of their mother, but this difference is less than 10 percentage points at about the child's age of 50 (Figure 2a). Mothers of Black children are much more likely to have died compared to mothers of White children of the same age: about 21% versus 8% at child's age 35, and 50% versus 33% at child's age 50 (Appendix Figure A-1). After excluding children whose mothers have died, Black children are much more likely than White children to live close to their mother, and this is true at all adult ages of the child and all distances (Figure 2b).

Figure 2: Distance from child to mother by age and race of child (percentage in each proximity category)



Survey years: 1968 -- 2015 (PSID)

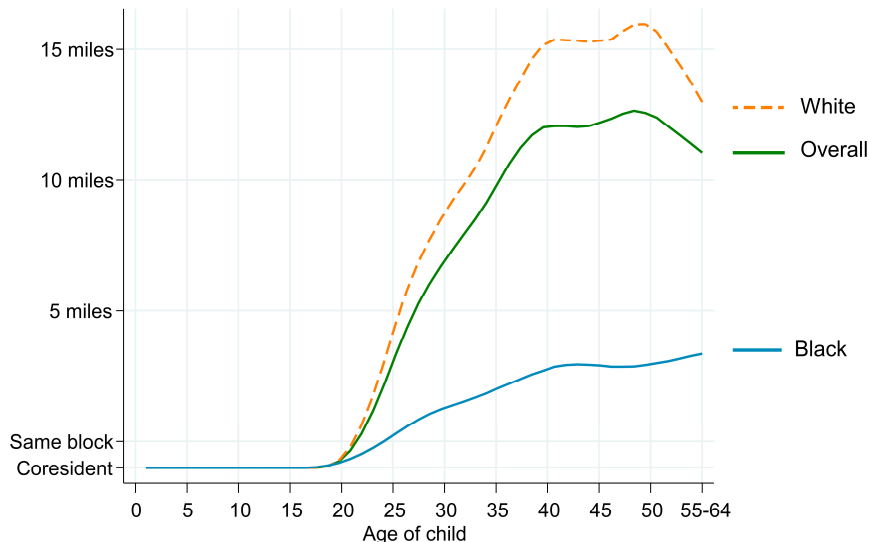
As summarized in Appendix Table A–2, during the 36 years between the child’s ages of 18 and 54, Black children spend more years living in the same house as their mother (9.1 years vs. 6.3 years) and living within 5 miles’ proximity (11.1 years vs. 8.5 years). However, Black children also spend many more years without a living mother (6.3 years vs. 2.6 years).

4.1.2 Median distance to mother

Among 1968 children with a living mother in a given year, the median distance to the mother steadily increases with the child's age up to about age 40 (Figure 3). The median, however, is always modest, masking a great deal of the heterogeneity in spatial proximity revealed in Figures 1 and 2. Nevertheless, Figure 3 shows that the spatial distance between a child and its mother typically increased (in terms of median) as the child matured, peaked at the child's age of near 50, and began to decline at older ages. The overall median distance from mother is 6.3 miles at the child's ages 25–34, 11.1 miles at ages 35–44, 12.4 miles at ages 45–54, and 10.1 miles at 55–64 (Table 1 right panel).

The median distance from the mother is lower for Black children than White children at all ages of the child over 20 (Figure 3). The gap between Black and White children increases up to about the child's age 40 when the median distance from mother is relatively stable before decreasing at older ages for White children. For example, the racial difference in median distance is about 4 miles at the child's age of 25, about 8 miles at age 30, about 10 miles at age 35, and about 14 miles at age 40.

Figure 3: Median distance from child to mother by age and race (in miles)

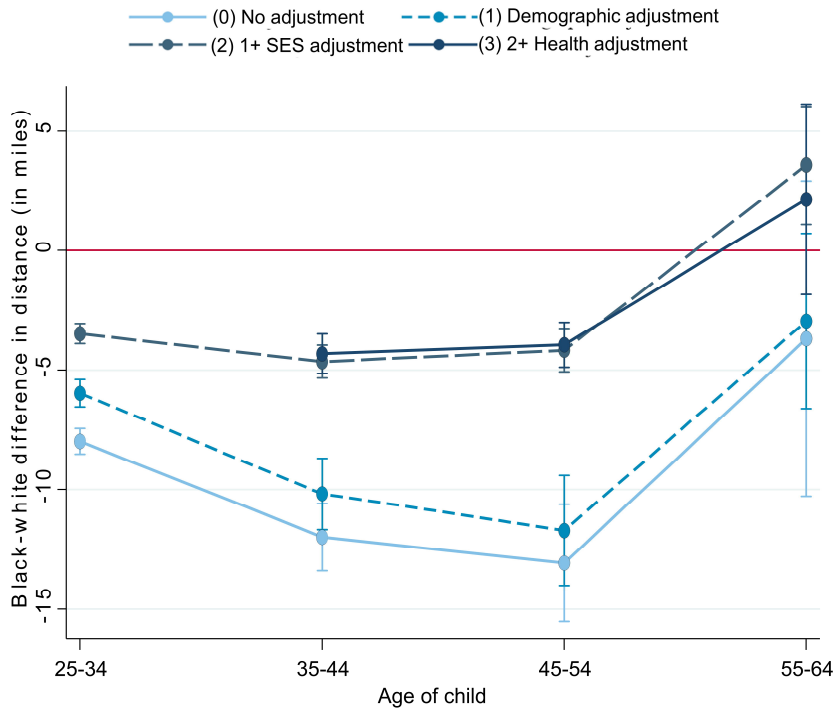


Sample: 1968 children whose mother is alive in a given year

There are substantial racial differences in demographic, socioeconomic, and health factors (Supplementary Table S-2a). Black mothers have more children than White mothers. The share of adult children who are not married (e.g., 55% vs. 23% at child's ages 35-44) and mothers who are not married (e.g., 60% vs. 33% at child's ages 35-44) are substantially higher for Black individuals. Black children are less likely than White children to have at least 16 years of education (10% vs. 32% at child's ages 35-44), be working (74% vs. 85% at child's ages 35-44), and own a home (44% vs. 76% at child's ages 35-44). The median ratio of income to poverty is lower for Black children than for White children (2.4 vs. 4.1 at child's ages 35-44), and mothers of Black children are more likely to be in fair or poor health (e.g., 50% vs. 23% at child's ages 35-44).

Figure 4 presents racial differences (Black minus White individuals) in the predicted value of median distance in miles from mother at each life stage based on the unadjusted and adjusted quantile regressions. The gap between Black and White individuals decreases with the demographic adjustment, especially at the child's ages 25-34. The socioeconomic adjustment substantially contributes to reducing the racial gap, especially at the child's ages 35-44 and 45-54; for example, the predicted gap between Black and White individuals in the distance is about 12 miles at the child's ages 45-54 with the demographic adjustment only, but about 4 miles at the same ages with additional adjustment for socioeconomic status. Additional health adjustment has little influence on the racial gap in the proximity to mother at any life stage. Overall, although some adjustments tend to reduce the racial gap substantially, observed demographic, socioeconomic, and health factors do not fully explain the gap between Black and White individuals for the ages of 25-34, 35-44, and 45-54. Complete estimates are provided in Supplementary Table S-2b. Estimates from the imputed data are comparable with these results.

Figure 4: Racial difference (Black minus White) in the predicted value of median distance from mother (in miles)



Sample: 1968 Children 25+ whose mother is alive and both who and whose mother are PSID head or spouse in a given year.

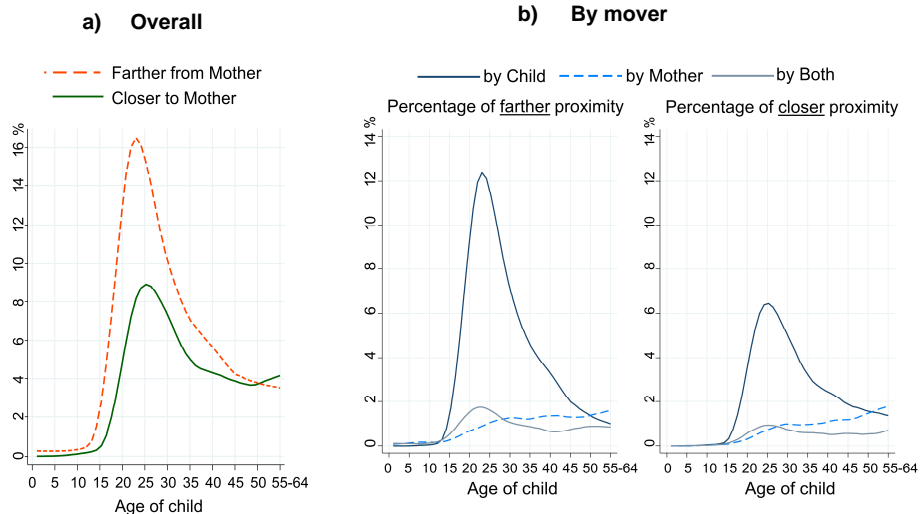
Note: Quantile regression is used for the estimates of median distances. Demographic adjustment includes focal person (adult child's gender, number of minor children in household, marital status, metropolitan status, and mother's number of children, marital status, and metropolitan status. SES adjustment includes focal person's and mother's education, employment status, home ownership status, and poverty ratio. A complete list of the adjustment variables is summarized in Supplementary Table S-2a and estimates in Supplementary Table S-2b.

4.2 Change in proximity to mother over the life course (dynamic patterns)

Estimates in Figure 5 suggest substantial changes in proximity of children to their mothers, especially when children are between their late teens and mid-30s. The greatest annual change occurred when children were in their mid-20s. The change in proximity to the mother is associated more with moving farther from each other than closer to each other. Based on the change in the categorical proximity measure, annually, about 15% of 1968 children with a living mother experienced an increase in distance from their mother

at the children's age of 25, while about 9% experienced a reduction in the distance at the children's age of 25 (Figure 5a).

Figure 5: Percentage of children whose proximity to their mother changed during the last 365 days, overall and by mover



Sample: 1968 Children whose mother is alive in a given year

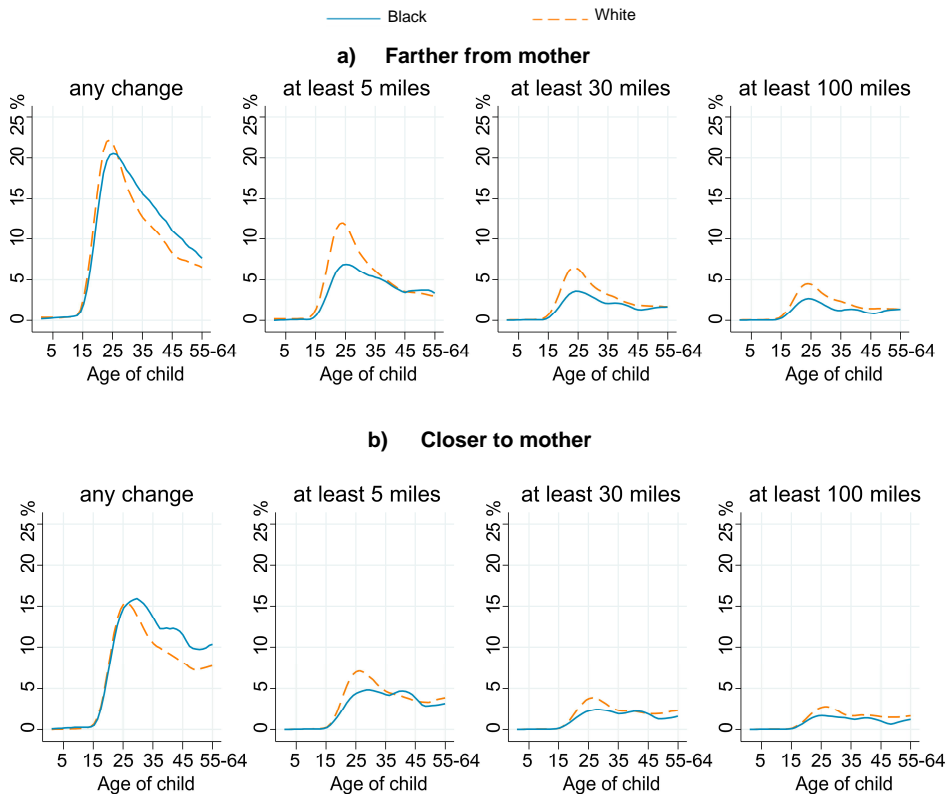
Note: Proximity change was measured using the categorical variable of proximity.

At most ages of a child up to about 50, changes in proximity were led by children moving only, rather than mothers moving or both children and mothers (Figure 5b). The paper's findings are generally consistent with the proximity patterns suggested by Lin and Rogerson's hypothetical mobility schedule (Lin and Rogerson 1995). For example, at the age of 25, about 12% of 1968 children with a living mother in a given year became farther from their mother because they themselves moved and their mother did not, while a much lower share (less than 2% at the child's age 25) experienced an increase in the distance because only their mother moved or both they and their mother moved (Figure 5b). Similar patterns are observed for closer proximity, but at a lower scale (Figure 5b).

Differences between Black and White individuals in proximity change vary depending on the magnitude of the change in proximity (Figure 6). Focusing on any change in distance from the mother, proximity change was more common among Black individuals at ages older than 30. For example, at children's age of 45, the rate is about 3 percentage points higher in terms of the percentage of increased distance for Black individuals (about 11% vs. 8%, Figure 6a) and about 4 percentage points higher in terms

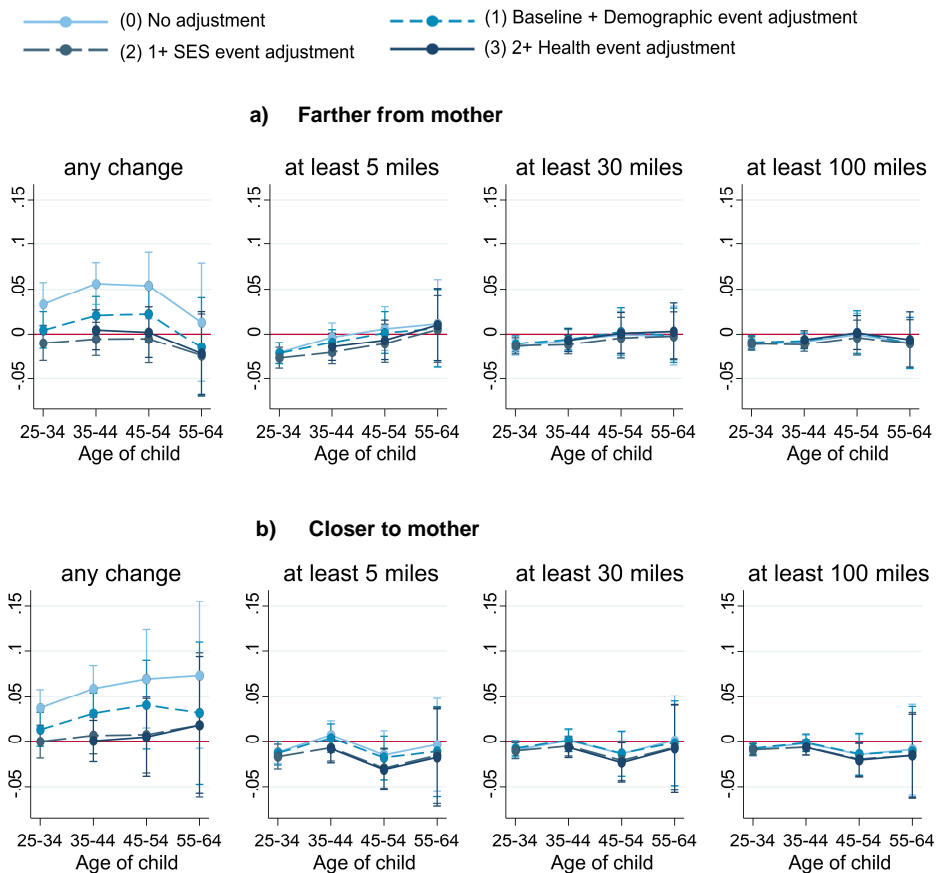
of the percentage of decreased distance (about 12% vs. 8%, Figure 6b). However, at almost no age are Black people more likely than White people to experience changes in proximity of at least 5 miles. For example, at children’s age 25, the rate of change in proximity to mother is higher for White individuals, by about 5 percentage points for the increased distance and by 3 percentage points for the decreased distance, if we impose the restriction of changing the distance by at least 5 miles.

Figure 6: Percentage of children whose proximity to their mother changed during the last 365 days, by race and the magnitude of change



Sample: 1968 Children whose mother is alive in a given year
 Note: Proximity change was measured using the semi-continuous variable of proximity

Figure 7: Racial difference (Black minus White) in the probability of change in the proximity to mother during the last 365 days



Sample: 1968 Children 25+ whose mother is alive and both who and whose mother are PSID head or spouse in a given year
 Note: The outcome of proximity change (no change, farther, closer) was measured using the semi-continuous variable of proximity. Four multinomial logistic regressions were used (any change, at least 5 miles, at least 30 miles, and at least 100 miles). Baseline covariate refers to the time-invariant factors in the analysis sample including gender, the number of children of the mother, and education of focal person (i.e., adult child) and mother. Demographic event adjustment included change in the number of minor children in the household of focal person, and marital status and metropolitan status of both focal person and mother. SES event adjustment includes a change in focal person's and mother's employment status, home ownership status, and poverty ratio. A complete list of adjustment variables is summarized in Supplementary Table S-3.

As presented in Figure 7, at every age where the racial difference was distinctive with the outcome of any change, it becomes not distinctive after we control for baseline variables, and demographic and socioeconomic events. As we impose a minimum

distance of change in the proximity (e.g., at least 5 miles, 30 miles, and 100 miles), at ages 25–34, proximity change is more common for White people regardless of the covariate adjustments: this is true for all three levels of minimum distance and for both closer and farther changes. At ages 45–54, White individuals are more likely to become closer to their mother once socioeconomic events are adjusted for. Additional control for a health event had little effect on the gap between Black and White individuals in the proximity change. Estimates from the imputed data are comparable with these results.

5. Discussion

By examining data spanning nearly half a century for the cohort born 1951–1968, this study provides valuable insights into the life course patterns of spatial distance between children and their parents. Overall, a large share of children lived very close to their mother through midlife. Conditional on children whose mother is alive, 1968 children who are Black are much more likely to live close to their mother compared to 1968 children who are White, at all ages of the child. Poorer socioeconomic status for Black vs. White individuals plays a substantial role in explaining closer proximity among Black individuals than among White individuals. While it was not tested explicitly in this study, racial discrimination is likely to have influenced parent–child proximity across the life course via socioeconomic pathways: Systemic racial segregation and denial of Black people’s access to social and economic opportunities contribute to lower rates of marriage, lower educational attainment, greater unemployment, lower socioeconomic status, and higher mortality among Black individuals (Chae et al. 2015; Han 2018; Mangino 2019; Raley, Sweeney, and Wondra 2015; Simons et al. 2021). Racial discrimination may result in both limiting opportunities that require relocation (e.g., college education) and increasing incentives for remaining close to family, such as needing to care for a parent who is ill. Despite the closer proximity among Black vs. White individuals, children who are Black do not have greater spatial availability of mother because their mother is much less likely to be alive in a given year.

While divergent movements in proximity dominate at most ages, convergent movements are also high when the children are in their 20s and 30s. Moves made by children drove changes in proximity to mother at most life stages. Racial differences in the change in spatial proximity between 1968 children and their mothers vary depending on the level of distance changed. When focusing on any change in distance to mother, changes at children’s ages older than 25 are more common among Black individuals than White individuals, which is attributable to socioeconomic factors including housing instability among Black individuals. However, at no age are Black people more likely than White people to have changes in proximity of at least 5 miles. This is consistent with

the fact that Black people have greater residential mobility over a short distance, while White people have greater residential mobility over a long distance, especially in their late 20s and 30s (Appendix Figure A–2). This may be attributable to a lower economic return of seeking a long distance move, greater need of instrumental support from families among Black people than White people, or more limited residential opportunities caused by racial discrimination.

This study contributes significantly to the literature on intergenerational proximity. First, it documents important life course patterns in intergenerational proximity. By following a national cohort of children (birth cohorts 1951–1968) and their mothers over 47 years, this study provides estimates of the life course patterns of the distance between children and their mothers in the United States. This knowledge is important because the implications of proximity for family transfers and relationships are likely to vary substantially over the life course depending on life events occurring at different life stages. Second, the study improves our knowledge of the dynamic patterns of intergenerational proximity by providing estimates of the share of divergent and convergent movements over the life course. Furthermore, by interacting intergenerational proximity with individual-level residential mobility the study provides important insights into the dynamic patterns – namely, whose move led to proximity change at each stage of life. Third, almost all prior studies of proximity to mother excluded those who did not have a living mother in a given year. This paper, however, demonstrates that analyses of child–parent proximity that exclude children whose parent is deceased provide an incomplete picture of the spatial availability of parents. This is particularly important for understanding racial differences in proximity because mothers of Black children die at much younger ages than mothers of White children. Fourth, the study examined spatial proximity at very short distances, such as the same block and less than 1 mile away, as well as long distances. Prior studies using national surveys used cut-off points for close proximity of 10 or 30 miles. While those cut-off points are reasonable for explaining some aspects of family interactions, further resolution with smaller distances (e.g., same block, 1 mile, or 5 miles) is important for assessing in-person support, and we find that living in such close proximity is common, especially among Black people. Finally, the study incorporated key demographic and socioeconomic factors over the life course and demonstrated the extent to which the racial differences in spatial proximity and in its dynamic patterns are accounted for by these factors at each life stage. It finds that demographic and socioeconomic factors account for more than half, and in some cases almost all, of the differences between Black and White individuals.

The study has some limitations. First, the share of coresident children in their young adulthood may be overestimated as it includes those in an educational institution. This would affect the White sample more than the Black sample because a greater share of White people goes to college. Second, as mentioned earlier, there is substantial sample

reduction over the 47-year period due to the change in the PSID sample design and attrition. While some sample members who were lost to follow-up for one wave reenter the sample in subsequent waves and we use longitudinal survey weights to reduce the effect of longitudinal sample attrition, there may be some remaining effect of sample attrition on results that was not fully addressed in the adjustment. Third, the PSID does not identify who within the household owns the home, so when adult children and their parents live together the data cannot be used to identify who is the home owner. While those cases are few in number during most of the adulthood (e.g., about 3% at the age of 40 in the analysis sample) and hence are unlikely to affect the substantive conclusions, it is important to be aware of this limitation because home ownership is associated with lower residential mobility. Fourth, the study used a spatial proximity measure of the shortest distance between two points on the surface of a sphere. The distance, however, is likely to be operated and perceived differently in real life depending on, for example, transportation mode and road connectivity, which are also influenced by economic resources and environment. Incorporating an alternative measure of the proximity such as travel time as well as physical distance would add more context to the dynamics of family proximity.

Spatial proximity among family members is likely to influence people's lives, including in-person visits, childcare from grandparents, labor market outcomes, migration decisions, and care for aging parents. This study provides a foundation for further research on family spatial proximity, the proximity's consequences for health and wellbeing, and differential effects across racial groups. Future research should examine proximity to one's children as well as one's parent. Connections up and down a generation simultaneously, including the so-called sandwich generation, are likely influenced by living near both, and the decision to live near one's parent is likely related to the decision to live near one's child. It would also be important to examine distance from the father over the life course. There may be a substantial racial difference in the father's availability, with less availability for Black children than for White children because of differences in out-of-wedlock births, union formation, and incarceration over this time period. More generally, an important study area is the implication for social and economic outcomes, such as migration and the intergenerational transmission of wellbeing, of having parents living in very close proximity, including on the same block, and how this implication changes over the life course. Are such families similar to families that are coresident and extensively share time and resources, or are they distinct? The study examines cohorts born 1951–1968 who shared a specific history and culture. Black individuals in this cohort inherited social, economic, and health consequences of systemic racial segregation while also leading the civil rights movement and achieving changes in laws regarding racial segregation. Factors associated with proximity, including marriage, education, and employment, have changed in subsequent cohorts.

Further examination using cohorts born after those studied here is important to assess the extent to which changes in these and other factors have shifted life course patterns of child–parent proximity.

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Appendix

Table A–1: Summary statistics by sample restriction

	Reference Sample 1	Reference Sample 2	Base Sample	Analysis Sample: 1968 Children	Analysis Sample: 1968 children whose biological/adoptive mother alive in a given year
	Restriction A: Age in 1968<=17 (Birth cohorts 1951- 1968)	Restriction B: A + living with any type of mother * in 1968	Restriction C: B + living with biological/adoptive mother in 1968 & identified in FIMS	Restriction D: C+ having information on biological/adoptive mother's vital status and location	Restriction E: D+ biological/adoptive mother alive in a given year
N. persons	8,504	8,090	6,022	6,022	6,022
N. person-year observation	192,898	186,900	173,789	166,098	151,575
Age (mean)	29.2	29.2	29.6	29.1	27.1
Female (%)	50.5	50.5	50.5	50.2	49.6
Race (%)					
White	82.0	82.9	83.6	83.8	84.9
Black	15.3	14.4	14.1	14.0	12.9
Other	2.7	2.6	2.4	2.2	2.2
Poverty ratio (mean)	246.6	248.5	249.8	249.8	250.9

Survey years: 1968 -- 2015 (PSID)

Note: * children with any type of mother were identified based on relationship to head as well as PSID FIMS. Any type of mother includes biological and adoptive mother, stepmother, and coresiding female partner of the head.

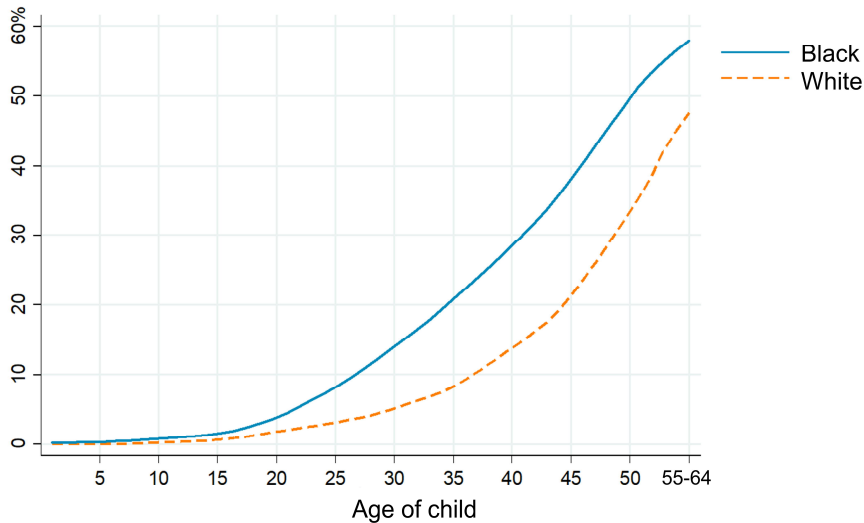
Table A-2: Expected number of years spent at a given level of proximity to mother between ages 18 and 54 (multi-state life expectancies)

	Overall	Black	White
Coresident	6.7	9.1	6.3
Same block or <= 1mile	4.3	5.2	4.0
1-5 miles	4.7	5.9	4.5
5-10 miles	3.2	2.3	3.4
10-30 miles	3.7	2.3	4.0
30-100 miles	2.9	1.6	3.2
100-500 miles	3.8	1.9	4.0
> 500 miles	3.7	1.5	4.0
No living mother	3.1	6.3	2.6
Total	36.0	36.0	36.0
N of persons	5507	2554	2805

Sample: 1968 children (PSID)

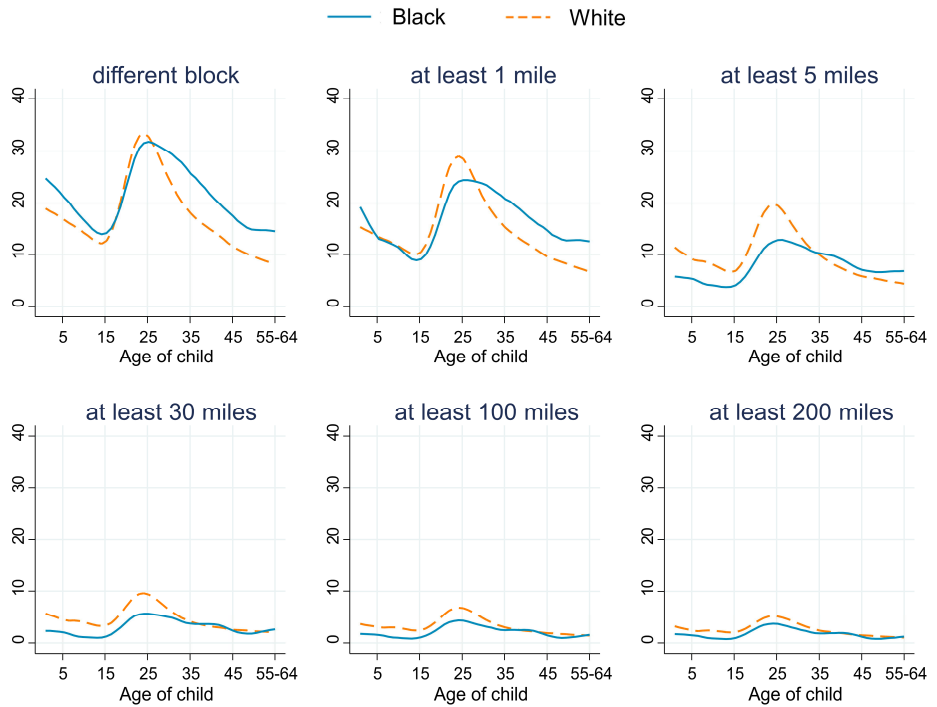
Note: Estimates are based on an unbalanced sample which includes all persons who have at least one record of proximity to mother in each age category.

Figure A-1: Percentage of children whose mother is not alive, by age and race of child



Sample: 1968 children (PSID)

Figure A–2: Percentage of children whose residential location changed over the last 365 days, by age, race, and magnitude of change



Sample: 1968 children (PSID)