Divorce, Family Arrangement, and Children's Outcomes*

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Abstract

We utilize U.S. tax and Census records to examine (1) how divorce shapes the arrangement of family life, and (2) how it affects children's outcomes. At the onset of divorce, parents move apart, household income falls, mothers' work hours increase, moving rates rise, and children move to poorer neighborhoods that have lower rates of upward mobility. Using panel data on child outcomes, we find that a children's teen births and mortality rise substantially at the time of divorce. We estimate the long-term effect of divorce on children's outcomes by comparing siblings with differing years of exposure to divorce in the same family. A parent divorce earlier in childhood reduces adult earnings and college attendance while increasing the likelihood of incarceration. About a third of the estimated effect of divorce is explained by changes in household income and neighborhood choice with the majority of the effect unexplained by these intermediaries.

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"The role of the family in shaping character and ability is so pervasive as to be easily overlooked."

∼Daniel Patrick Moynihan

1 Introduction

Families are a pervasive and fundamental institution across otherwise dissimilar societies. Sociologists and political philosophers have referred to the *family* the "first and foremost institution," a sentiment echoed by Gary Becker when he described the family as "the most fundamental and oldest of institutions" in his Nobel Lecture (Murdock, 1949; Becker, 1981; Levin, 2020). Humans depend on particularly long periods of childrearing and especially intensive parenting to educate and socialize their offspring (Daly et al., 1988; Maccoby, 2007; Houzel, 2019). Given the extended and pivotal nature of human childhood (Chetty et al., 2014b; Dahl et al., 2014; Barr et al., 2022), family formation and structure may play a significant role in the development of children's skills and social integration.

Over the last century, the patterns of family life have changed substantially, with a rise in the divorce rate (Friedberg, 1998; Wolfers, 2006) and a decline in the marriage rate (Lundberg and Pollak, 2015). As demonstrated in Figure 1, the divorce rate has more than tripled in the last century, with a particularly sharp increase starting in the late 1960s (see Kennedy and Ruggles, 2014). While divorce was rare before World War II, we find that 29 percent of children born in the U.S. between 1988 and 1993 experienced the divorce of their parents before adulthood.

Given the prevalence of divorce, understanding its impact on children represents a potentially important question. Theory offers little guidance. On one hand, a prevailing view is that unhappy marriages negatively affect children.[1,2] Consequently, the dissolution of an unhappy marriage by divorce may promote the wellbeing and development of

[1]For instance, therapists Melvin and Patricia Krantzler write, "Many parents may indeed stay together because they believe divorce will harm their children...What they fail to realize is that...more harm will result from 'staying together' than divorcing" (Krantzler, 2014)

[2]Whether or not divorce is always good, it appears likely that separation will improve child outcomes when doing so shields children from abusive or irresponsible parents (Norris and Weaver, 2021).

children (Waite and Gallagher, 2001; Hetherington, 2003; Krantzler, 2014). On the other hand, some have posited reasons divorce itself can have a negative impact on children. For instance, divorce may affect family resources and function in a way that impacts children's development.[3]

Where theory provides little guidance, the question is also empirically challenging. Data-driven estimates usually derive from cross-sectional studies or small longitudinal surveys. While insightful, these strategies typically fail to estimate true causal effects (McLanahan, 1988; Strohschein, 2005; Lerman et al., 2017). The effect of divorce is difficult to study, inherently, because of selection—families that divorce may differ in a range of unobserved ways from families that do not—and a lack appropriate data. In particular, it is difficult to collect records that (1) capture family structure, (2) link parents to children, and (3) provide outcomes for children. To address these obstacles, we harness administrative tax data for all children born in the U.S. between 1988 and 1993. These records allow us to trace out the marital histories of parents, link those histories to children, and observe children's outcomes.

We first use these records to provide a portrait of how family life changes at the time of divorce. At divorce, average household income falls by 50 percent as parents separate their incomes into two residences. Household income recovers two-thirds of the initial loss over ten years.[4] The reduction in income takes the average divorced household from the 53rd percentile of the household-income distribution to the 30th. In the year of the divorce, the yearly moving rate nearly triples and remains elevated for several years after the divorce and moving rates are similar for both men and women. We find that divorcing families move to neighborhoods with 7 percent lower incomes at divorce, and these neighborhoods offer less opportunity in a range of causal and descriptive measures (Chetty et al., 2018). Distance between parents increases at divorce and grows larger over time. The

[3]Specifically, divorce may reduce the resources devoted to children, as families lose efficiencies from scale and specialization; or, divorce may introduce emotional turmoil and strain at separation and as the family system growth complex with new romantic partners and competing claims for priority (Suomi and Leroy, 1982; Cherlin et al., 1991; Strohschein, 2005).

[4]Our measure of household income is *adjusted gross income* (AGI) which includes earnings and alimony, but it does not include child support payments. Therefore, the full decline in income is somewhat smaller for most families.

parent that claims the child is (by statute) the parent with whom the child resides a majority of the year. We find that 92–95 percent of children are claimed by their mother after a divorce rather than their father. About half of parents remarry within five years of divorce, introducing step parents to the family system. Survey data from the American Community Survey shows the average alimony payment and that work hours among mothers increases at divorce.

We then examine the effect of divorce on two contemporaneous outcomes that we can observe each year over time for children: teen births and mortality. Teenbirths fall in the year of a divorce and then climb significantly to 63 percent higher than pre-divorce levels (adjusting for age and birth cohort). Mortality rises by 55 percent in the year of divorce (by 15 deaths per 100,000 children per year), with no apparent pre-trend. Somewhat surprisingly, the mortality effect is permanent, increasing mortality by the same proportion for as long as we observe children. These estimates are a useful touchstone because they produce the same magnitude as the design we use to estimate long-run effects.

We turn to measuring the causal effect of divorce on long-run child outcomes. We address family selection by comparing siblings *within* a family who had different exposures to divorce. Younger siblings are exposed to the divorced family arrangement earlier in life and for a longer portion of childhood than are their older siblings. While siblings differ in exposure to divorce, they share many common attributes, including a similar initial environment as well as similar inherited endowment from their parents. The within-family design thus avoids complicated comparisons *across* families with different unobservable attributes, in an approach similar to Chetty and Hendren (2018).

We find that, on average, spending an additional year in a divorced family decreases a child's income in adulthood by approximately 0.2 percentiles, or about 0.4 percent. Including controls for birth order, birth spacing, and sex have no effect on the estimates once family effects are accounted for.[5] The effects scale so that a child whose parents were divorced when he was young would earn 9 percent less than a child whose parents divorced when he was 25 years old. In the cross section, children raised by ever-married parents

[5]We include these controls throughout the analysis.

earn 36 percent more than children whose parents divorce in early childhood. Our results suggest that a quarter of the cross-sectional gap is attributable to the causal pathway of family structure.

We find parallel effects on a range of other long-term outcomes. Parental divorce in childhood increases the risk of teen birth by 0.9 percentage points (73 percent), with the largest risks generated by divorces occurring before late adolescence. Divorce exposure before late adolescence also increases the risk of incarceration by 0.2 percentage points (43 percent). Childhood divorce reduces college attendance in 2010 by 4 percentage points (44 percent). Divorce has insignificant effects on employment and marriage.

In examining moderating factors, we find that divorce has similar effects among well-off and less well-off families (i.e., similar effects among families in the top third of the income distribution and those in the bottom third), as well as similar effects by race.[6] We also find that the effect of divorce is similar among boys and girls (for comparison, see Bertrand and Pan, 2013; Fan et al., 2015; Autor et al., 2019).

In the last section of the paper, we seek to understand why divorce affects child outcomes. We use estimates from *Opportunity Insights* to calculate the change in neighborhood effects at the time of divorce on children's adult income (Chetty et al., 2018). We estimate the influence of family income by implementing a within family design where children in the same family are exposed to different income levels at different ages due to the income dynamics of parents. To isolate the effect of income, we estimate the effect on the set of ever-married families and reweight ever-married families to match the income and demographics of divorcing families. When we take these estimates at face value, we find that family resources explain between 2 and 20 percent of divorce's effect on children's adult income,[7] and neighborhood effects explain 7 percent of the overall effect of divorce. This suggests that some of the effect of divorce is explained by income and neighborhoods, but

[6] Throughout the paper, we use the Office of Management and Budget (OMB) definitions of race and ethnicity. Black refers to Black non-Hispanic, white refers to white non-Hispanic, and Hispanic refers to Hispanic of any race. See Statistical Policy Directive No. 15.

[7] We don't directly observe how divorce affects consumption. To bound the range of possible income effects we assume that income falls by 50 percent at the high (the initial drop we observe) end and 7 percent at the low end (the drop in neighborhood income). We believe that 7 percent is closer to the actual reduction in material resources available to children by way of divorce. These two poles generate the range in income effects we report.

much of the effect is unexplained by these pathways. Work to understand how divorce affects time with parents and interactions within a family may shed additional light.

The primary threat for this within-family identification strategy is if (i) parents are endogenously more likely to divorce when younger children have worse expected outcomes than their older siblings and (ii) this selection into divorce varies with the age of the children. We find two kinds of evidence against this type of selection. First, we find the difference in adult outcomes between younger and older children of divorce is proportional to the difference in their exposure to the divorce (i.e., their age difference). Selection effects would present themselves as lower outcomes for all younger children, no matter their age difference, with no gradient in exposure. We see the opposite—a strong gradient with no level reduction in outcomes for younger siblings. The yearly effects estimated from these differences are very similar to our baseline estimates. Second, we also find no association between earlier divorce and markers of disability like residence in a group home or a psychiatric home for younger children. An additional concern is whether parents endogenously alter the timing divorce because some siblings are less able to cope. This behavior would tend to lead our empirical approach to underestimate the effect of divorce on children (McLanahan et al., 2013).

It bears mention that we estimate the effect of a divorce "bundle" and not the narrow effect of a legal change called *divorce*. Divorce is a marker of family breakup that changes many things in the family system that might affect children—some of which we observe (like household income, neighborhoods, and co-residence) and others of which we cannot (family solicitude, time investments, and abuse). In the absence of legal divorce, couples may produce the same changes in the arrangement of family life that they would through a formal divorce, so our work speaks most directly to the effect of family breakdown and does not directly serve as an assessment of rules governing the ease or difficulty of the divorce process.

This paper contributes to previous work which has usually had to rely on cross-sectional comparisons that may not account for selection or relatively small longitudinal surveys whose results are difficult to interpret due to wide confidence intervals. Our paper

is among the first to use administrative data to identify divorces and estimate their impacts on families and children. The closest studies to ours are (Gruber, 2004) who uses no-fault laws as an instrument for divorce and (Laird et al., 2020) who, like us, study the effect of divorce on children's outcomes in a design similar to ours. Being highly complementary, Laird and coauthors focus primarily on outcomes in secondary school (enrollment and completion) and mental health (psychiatric treatment) whereas our paper focuses on the arrangement of family life and adult outcomes including college residence, earnings, incarceration, teen births, and mortality.

Our findings yield three broad lessons. First, family structure matters for human capital formation: the differences we see in outcomes across divorced families are largely due to the causal effect of divorce, rather than differences in unobservable factors. Second, family structure may matter because of differences they create in childhood environment, including household income, neighborhood, and exposure to stepfamily. Family structure changes that children experience just before entering the labor market have little impact on outcomes, suggesting that policies that promote family formation and stability would be more effective when targeted to young families. Third, because divorce has a negative effect on children's adult outcomes, and is more common among low-income families, family breakdown may serve to exacerbate existing inequalities.

2 Background and Literature

Observational studies document significant differences in the outcomes of children raised in ever-married, divorcing, and ever-single homes (e.g., Coleman et al., 1966; McLanahan, 1988; Ellwood and Jencks, 2004), but it is broadly understood that these comparisons may reflect selection rather than causation. Measuring the causal relationship of family life on outcomes is not straightforward (Harris et al., 1998; McLanahan et al., 2013). First, past research has relied on retrospective family surveys using small samples and a lack of repeated measures on children's outcomes. Studies of divorce using contemporaneous panel data often suffer from measurement error in the timing and degree

of separation (Gennetian, 2005). Second, divorce is correlated with other factors: for instance divorce is associated with parent income and education while also predicting child outcomes (Browning et al., 2014).

Over the past century, the structure of families has undergone tectonic shifts. In 1910, a quarter of teenagers lived without one of their biological parents, but this was primarily due to the premature death of a parent. By 1990, nearly half of all teenagers lived without one parent—their parents were either separated or never married (Ellwood and Jencks, 2004). This large increase over time in the fraction of children living in a single parent household can be seen in Figure 2 which uses the decennial census to report the fraction of children living in a never married, divorced, or separated single parent household each decade.[8] Over this period, divorce became more common, with divorce rates more than doubling from 1960 to 1980 (Wolfers, 2006; Friedberg, 1998), while the rate of never-married parents increased from one percent in 1965 to 13 percent in 2000 (Ellwood and Jencks, 2004). This shift in family structures is concentrated among the most disadvantaged households. Among those with no more than a high-school degree, the percent of young children living with a single parent grew from 20 percent to 65 percent between 1950 and 2013. In contrast, children with college-educated parents are only two percentage points more likely to live with a single parent than they were in 1950 (Putnam, 2016).

A large literature studies the impact these changes in family structure have on children's human capital development. Parents develop human capital in their children (Becker, 1981; Becker and Tomes, 1986) by two primary channels according to economic models: parents invest financial resources that foster human capital formation (e.g., through schooling, nutrition, healthcare, and shelter) and parents transmit human capital directly (by modeling behavior, providing instruction, interacting socially, and potentially conveying values that promote well-being). Thus, a parent's absence can affect human capital formation by reduction of either of these inputs. Shocks to family structure alter children's standard of living (Duncan and Hoffman, 1985), as well as the rate of contact for interpersonal transmission (Del Boca and Ribero, 2001). Outside of economic models,

[8]These data do not capture the residential absence of a natural parent by divorce once their parent remarries.

sociologists document how divorce changes changes the institutional decision process of a family life, and biologists document the complicating nature of step family for children.

Evidence on the effect of parental divorce and death illuminates the impact of parents, though it combines the influence of financial and personal inputs. Gruber (2004) uses policy changes in divorce laws to estimate the effects of making divorce less costly. He finds that children raised in states where divorce was simpler and thus more common are less educated as adults, have lower incomes, enter more unstable relationships, and are more likely to commit suicide. A number of persuasive papers, mainly using data from countries outside the U.S., leverage parent death, which—though imperfect—appears less endogenous than divorce decisions. These papers tend to find negative effects of parent death that are much smaller than the cross-sectional correlation between divorce and outcomes (Lang and Zagorsky, 2001; Steele et al., 2009; Francesconi et al., 2010). Parent death is associated with lower marriage rates and higher marital instability(Corak, 2001) and reductions in education (Case and Ardington, 2006; Chen et al., 2009; Gertler et al., 2004).

Our work most resembles recent studies that have attempted to isolate the impact of divorce using sibling fixed effects. These studies are data intensive and have been undertaken in the context of Scandinavian countries, whose divorce laws and policies differ from the U.S. context. The results of such studies have been mixed, with some finding no impact of divorce on children's educational outcomes (Björklund and Sundström, 2006; Sigle-Rushton et al., 2014), and others finding small negative effects on children's human capital attainment and mental health (Laird et al., 2020). Our work also resembles Chetty and Hendren (2018) and Chetty et al. (2020), who examine the impact of a childhood shock (moving to a better neighborhood) as a function of the age at which a child moves. These "movers" models rely on differences in exposure duration to uncover the causal effect of the move, finding more positive outcomes for children who move to a better neighborhood earlier in childhood.

3 Data

3.1 Sample Definitions

To estimate the impact of divorce on children, we use federal tax, Social Security Administration (SSA), and U.S. Census Bureau records. Our main data set of children consists of all individuals who (i) were born between 1988 and 1993, (ii) were first claimed as a dependent by a married couple,[9] (iii) have a valid Social Security Number (SSN) or Individual Taxpayer Identification Number, and (iv) are U.S. citizens. We impose the citizenship requirement to exclude individuals who are likely to have immigrated to the United States at older ages, for whom we cannot measure parent income.[10] For these children, we use Form 1040 and Form W2 information between 2003 and 2018 along with 2010 Census information to observe their adult outcomes.

While our main analysis data set is children born to married parents, we also use all children born between 1988 and 1993 for some descriptive statistics. Because our analysis frame is the SSA's list of SSNs ever issued (the Numident), our strategy captures between 93 and 95 percent of all children with an SSN.

For each child in our sample, we identify their mother and father using the first year they were claimed as a dependent. Since the analytic sample is children first claimed by a married couple, we identify the female tax filer as the mother and the male tax filer as the father.[11] To more accurately identify the biological or adoptive parents, we restrict the data to children whose identified mother is between the age of 15 and 40. No age restriction is placed on the identified father.

We use tax filing information to trace out the marital histories of a child's mother and father, both before and after the child was born. To do this we use Form 1040 data from 1974 to 2018, in which taxpayers indicate their filing status: single, (unmarried) head of household, married filing jointly, married filing separately, or qualifying surviving spouse

[9] This includes children who were claimed by an individual whose filing status was either married filing jointly or married filing separately.

[10] We cannot directly restrict the sample to individuals born in the United States because the database only records current citizenship status.

[11] As shown in Figure 4a nearly 80 percent of children are first claimed by a married couple

(widowed in the past two years). Using this information along with individual identifiers for whom a person files with (e.g., with the child's father or with another person) we determine the year in which a divorce occurred. In addition, this information allows us to identify if and when a child's parent gets remarried.

3.2 Variable Definition and Summary Statistics

In this section, we define the key variables we use in our analysis. We measure all monetary variables in 2020 dollars, adjusting for inflation using the headline consumer price index (CPI-U). We begin by defining the three key variables we measure for parents: structure, income, and location.

1. Family structure. As described above, we infer a child's family structure from the filing status history of a child's parents. We code "single" parents as those who file as "single" or "head of household"; we code "married" as those who file as "married filing jointly" or "married filing separately"; and we code a death in those families that file as a "qualifying widow(er)." Because children are much more likely to live with their mother than their father, if the parents are divorced, we used the filing status of the mother for the current, residential family structure of the child.

2. Parent Income. Our primary measure of parent income is total pretax income at the household level, which we label parent family income. In years where a parent files a tax return, we define family income as adjusted gross income (as reported on the 1040 tax return) plus tax-exempt interest income and the nontaxable portion of Social Security and Disability (SSDI) benefits. In years where parents have no tax returns and no information returns, family income is coded as zero. Income is measured prior to the deduction of income taxes and employee-level payroll taxes, and excludes nontaxable cash transfers and in-kind benefits.

In our baseline analysis, we average parents' family income over the five years from 1996 to 2000 to obtain a proxy for parent lifetime income that is less affected by transitory fluctuations (Solon 1992). We use the earliest years in our sample to best reflect the economic resources of parents while the children in our sample are growing up. Because we

measure parent income in a fixed set of years, the age of the child when parent income is measured varies across birth cohorts. We account for this variation by conditioning on the child's birth cohort throughout our analysis.

3. Parent Location. In each year, parents are assigned Census tracts of residence based on the address from which they filed their tax return. If the parent does not file in a given year, we search 1099 address information for a payee Census tracts in that year (beginning in 2003). Nonfilers with no information returns are assigned as missing.

Next, we define the adult outcomes that we analyze for children.

4. Income. We define child family income in the same way as parent family income. We measure children's annual income at ages ranging from 23–27 and define the child's household based on his or her marital status at the point at which income is measured. To evaluate robustness, we also examine individual income, defined as the sum of individual W-2 wage earnings, unemployment insurance benefits, SSDI payments, and half of household self-employment income as reported on Form 1040.

5. Employment. We define an indicator for whether the child is employed at a given age based on whether he or she has a W-2 form filed on his or her behalf at that age.

6. College Attendance. We define college attendance as an indicator for being enrolled in college in the 2010 Census; we proxy for this variable through identifying students living in dormitories.

7. Teenage Birth. For both males and females, we define a teen birth as occurring when a child claims a dependent on their own tax forms whose age indicates the dependent was born when the child was a teenager.

8. Marriage. We define an indicator for whether the child is married at a given age based on the marital status listed on 1040 forms for tax filers. We code nonfilers as single.[12]

9. Incarceration. We define incarceration based on the 2010 Census, which indicates whether an individual was incarcerated on the day the Census was taken.

10. Military Service. We define Military service based on the 2010 Census, which indicates whether an individual was serving in the military on the day the Census was

[12]Linked CPS ASEC and IRS tax data show that the vast majority of nonfilers below the age of 62 are single (Cilke, 1998).

taken; we proxy for this variable using base residence.

11. Mortality. Finally, we define (premature) mortality based on whether a child has died before 2018 in the Numident file.

3.3 Summary Statistics

Panel A of Table 1 reports the summary statistics for our analysis sample in which children are first claimed by married parents who then divorce by the end of 2018. Panels B and C report analogous summary statistics for children first claimed by an unmarried parent or by always married parents, respectively. Roughly, a third of the children in this sample are first claimed by married parents that then divorce. Children in our analysis sample who experience parental divorce, typically have family characteristics that are less advantaged than children in the always married sample but more advantaged than children born to an unmarried parent. For example, we find that the median parent income for divorced families is $47,130, whereas the income for the always married and unmarried samples are $78,780 and $18,040, respectively. Similarly, the mean parent income rank of divorced families in 2000 is at the 49th percentile, while the mean rank is at the 66th and 27th percentile for the always married and unmarried samples. These differences underscore concerns about cross-sectional comparisons across families.

Similar to parent family characteristics, children who experience parental divorce typically have median adult outcomes that are in between the median outcomes of children raised in the always married and unmarried samples. Children who experience divorce have a median income of $26,910, which is at the 51st percentile. In addition, 26 percent of children in our analysis sample are married by the age of 27, and 1.6 percent had a child as a teenager. Of children who experience parental divorce, 0.6 percent were incarcerated in 2010—a rate three times higher than that of children born to always married parents, but a third of incarceration rate of children born to unmarried parents. Last, a higher fraction of white children are in always married households compared to their representation in divorced or unmarried households, while the opposite is true for Black and Hispanic children. Black children are nearly half of all children born to unmarried parents.

In addition to the summary statistics, Figure 3 illustrates the likelihood of divorce by parent family income rank and race and ethnicity. Both panels use data on children born between 1988 and 1993 who were first claimed by married parents. For Panel A, we regress an indicator for whether a child experienced a parental divorce prior to 2018 on county and race fixed effects, and then plot the average residual for each income percentile.[13] There is a strong divorce gradient by income, with children at the 20th percentile of parent family income having 35 percentage points higher likelihood of experiencing a parental divorce than children in the top quintile. Analogously for Panel B, we regress an indicator for whether a child experienced a parental divorce prior to 2018 on Census tract and income percentile fixed effects. The average residual for each race or ethnicity is reported with the average divorce rate added back in to facilitate interpretation. Similar to income, there are large differences in the likelihood of experiencing a divorce by race and ethnicity. Asian children are the least likely to experience a parental divorce at 17 percent, while white and Hispanic children are around 30 percent. Black children have the highest likelihood of experiencing a parental divorce at 45 percent. These figures highlight the large differences in the likelihood of experiencing a parental divorce for children of different social-economic status, race, and ethnicity.

4 Event Studies around Divorce

Before estimating the effect of divorce on children's adult outcomes, we first describe how children's resources and family lives change at the time of divorce. To do this, we provide event studies for how household income, moving patterns, neighborhood characteristics, and the likelihood of stepparents entering the family changes for children at the time of divorce. Figure 5 reports the results of these event studies.

Panel A of Figure 5 shows large changes in household income after a divorce occurs. Specifically, Panel A reports the average household income for the household that claims the child in the year relative to the parental divorce. Prior to divorce children's average

[13] The bottom 20 percentiles are omitted due to reporting zero family income.

household income was stable and slightly rising at around $70,000. Average household income drops precipitously by more than half to $30,000 in the year after the divorce and then rises to $50,000 and $60,000 five and tens year after the divorce, respectively. This large drop likely occurs because at divorce a household splits into two separate households and children's household income now comes mainly from one parent. Even ten years after the divorce, income is still 15 to 20 percent lower than pre-divorce levels. Figure A.2, reports a similar pattern for household income rank and shows that household income rank drops by 23 percentile points at the time of divorce and remains deflated by 10 percentile points even 10 years after the divorce. These results find no decline in income in the years leading up to divorce suggesting that a negative shock to household income potentially plays little role in causing divorces generally. However, the large drop in income after divorce likely plays a large role in reducing the financial resources available to children after divorce. This potentially reduces investments into children that would have helped build children's cognitive and noncognitive human capital.

Event studies on migration patterns show that children are much more likely to move residences around the time of a divorce. Panel B of Figure 5, reports the fraction of children that move to a different residence in a given year relative to the divorce. Each line reports the fraction of children that moved out of either their address, Census block, Census tract, county, or state. The average moved rate three to five years prior to divorce is approximately 13 percent for moving residences and 14 percent for moving across counties.[14] The move rate increases substantially to 35 percent in the year of the divorce and stays substantially elevated for the next 5 years.

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[14]

[15]The pre-divorce fraction of children that moved states, county, or residences is similar to move rates found

move rate increases substantially to 35 percent in the year of the divorce and stays substantially elevated for the next 5 years. In contrast to income, the increase in the move rate appears to start one or two years prior to the divorce. This suggests that some couples separate prior to divorce which leads to an increase in children changing residences in the years leading up to divorce.

In addition to moving, Panel C shows that the neighborhood quality also changes during divorce. Panel C of Figure 5 reports the average household income percentile for the Census tract that children lived in during a given year relative to the divorce. Three to five years prior to divorce the average household income percentile of children's Census tract is just above 53 percentiles. The average income percentile starts to decline two years prior to the divorce and falls to four percentile points (seven percent) below its peak in the several years right after divorce. The average income percentile of children's neighborhoods remains deflated by 3 percentile points even 10 after the divorce. This suggests that the reduced financial resources, seen in Panel A, push children's households to move to lower-quality neighborhoods.

Lastly, Panel D of Figure 5 reports the cumulative fraction of children who have a stepmother or stepfather enter the family by the indicated year relative to divorce. By construction, this fraction of stepparents in the years prior to divorce is zero. After the divorce stepparents quickly become part of the children's family dynamic. Within one year after a divorce, 25 percent of children have a stepmother, and 50 percent of children have a stepmother within five years. Similarly, 25 percent of children have a stepfather within two years and 50 percent within five years. Overall these results suggest that both financially and environmentally, children experience many changes at the time of divorce.

4.1 Estimating the Effect of Divorce from Panel Outcomes

We observe a yearly outcomes for children in two fields: teen births and mortality. These allow us to implement a difference-in-differences design examining how child outcomes change around a divorce. We implement the design with the following equation:

by Molloy et al. (2011); Hyatt et al. (2018)

$$y_{it} = \sum_{k=-m}^{M} \eta_1^k 1(\tau_t = k) + \alpha_{it} + \lambda_i + \varepsilon_{it} \tag{1}$$

Here, an outcome y_{it} (i.e., teen births and mortality) for child i in year t is regressed on event-time indicators for treatment (divorce) and control variables. The regression coefficients of interest, $\hat{\eta}_1^k$ (for $k \in [-m, M]$) capture eventy-study regression estimates of the evolving effect of divorce over time. The coefficients $n_1^k \in [-m, -1]$ capture time path before the divorce—the pre-divorce trends—, and coefficients $n_1^k \in [0, M]$ capture the dynamic treatment effects after treatment. The control variables include age fixed-effects in each year we observe a child's outcomes (α_{it}), which captures the dynamics of age in teen births and mortality risk, and cohort fixed-effects (λ_i). The error represents unobserved individual shocks that are assumed to be uncorrelated with the regressor of interest. Identification of the event-study coefficients comes from the fact that children in experience divorce at different ages.

The identifying assumption in this class of models is that there are no other factors generating differential trends at the time of divorce other than the divorce "bundle" including changes in household income, neighborhood, and family cooperation. If divorce were significantly correlated in time with layoffs, however, we might worry that the effects we observe are driven by the layoff rather than the divorce that is coincident to the layoff. When we look at tax and ACS data, we don't find evidence that layoffs do not appear to be associated with divorce in time. Relatively few partners are involved in drug addiction, homelessness, or incarceration before a divorce, suggesting that these factors represent an insignificant share of the divorce bundle we are estimating.

[Effects on mortality]

We do not see cause of death in the Numident file. We do know however the causes of death for children generally over the period in question from the Center for Disease Control (Cunningham and Carter, 2018). These data indicate that the leading causes of death among children and adolescents was "injury-related causes" at 61 percent which includes motor vehicle accidents (20 percent of the total) and firearm-related injuries (15

percent of the total). (Among firearm-related deaths, 59 percent are homicides, and 35 percent are suicides. The remainder are undetermined.) Pediatric cancers are the third leading cause of death in children and adolescents (9 percent), and fourth is suffocation (7 percent). Among suffocation deaths, 83 percent are for suicide and the remainder are accidental, usually for small children. Next is drowning (5 percent), drug overdose (5 percent), and congenital abnormalities (5 percent).

One possible explanation for death rates increasing exactly at the time of divorce arises from more driving. The U.S. Department of Transportation's National Highway Traffic Safety Administration reports an overview of traffic deaths each year in an annual report. In 2019, there was 1.1 death per 100 million miles driven in the United States. For a number of reasons, we suspect the mortality risk for the children of divorce to be overstated by this population average.[16] If we take that population average as the risk faced by children of divorce, it would have to be that divorce caused children to drive 13,636 additional miles per year (an increase slightly larger than the population mean), or 262 additional miles per week. If children drive an additional 10 miles ([THE AVERAGE DISTANCE BETWEEN DIVORCED PARENTS]) per week as a result of divorce, that would explain 4 percent of the increase in mortality that we observe using the population risk rate.

One possible explanation for the death effe

5 Within-Family Estimation for Adult Outcomes

The objective is to estimate the effect of divorce on children's outcomes, including college attendance, earnings, and incarceration. In this section, we formally define our estimands of interest when panel outcomes are not available—and describe the research design we employ. To identify this effect, we exploit varying exposure to divorce within

[16]This isn't likely the actual mortality risk for driving families for two core reasons. First, parents driving with children are likely to engage in fewer risky behaviors while driving with their children than is the general population. The primary risky behaviors parents likely eschew include speeding, driving under the influence, and failing to wear a seat belt. Each explains a disproportionate share of motor vehicle fatalies (for instance Americans don't wear their seatbelt an estimated 10 percent of the time, but this 10 percent explains 50 percent of car fatalities). Second, the mortality rate includes deaths from pedestrians and cyclists, where these deaths are not part of the risk of riding in a car for the children of divorce. We suspect the implied risk for the children of divorcing families is too high by an order of magnitude.

a family using the age of siblings at the time of divorce. Our empirical framework closely follows the methodology of Chetty and Hendren (2018) that studies the effect of neighborhoods on children.

5.1 Definition of Divorce Effects

We wish to determine how much a child's potential outcomes would change on average if his or her married parents divorced. We answer this question by studying children of married parents who experience a parental divorce. We define the exposure effect of divorce at age m as the effect of spending an additional year at age m in a family after a divorce.

To solidify ideas, consider a hypothetical experiment in which we randomly assign children's parents to get divorced at age m. The best linear predictor of children's outcomes, y_i, in the experimental sample can be written as

$$y_i = \alpha_m + \beta_m D_{mi} + \theta_i \tag{2}$$

where D_{mi} indicates a parental divorce at age m for the child, and the error term θ_i captures individual, family, and other determinants of children's outcomes. Since random assignment guarantees that θ_i is orthogonal to D_{mi}, estimating Equation (2) using OLS yields a coefficient β_m that represents the average effect of spending year m of one's childhood and onward in a divorced family. We define the divorce exposure effect at age m as $\gamma_m = \beta_m - \beta_{m-1}$. If the outcome y_i is measured at age T, then $\beta_m = 0$ for $m > T$, since divorces that occur after the outcome is measured cannot have a causal effect on the outcome without anticipatory effects.

Estimating the exposure effects β_m is of interest for several reasons. First, an effect at any age allows us to evaluate the null hypothesis that divorce does not matter. Second, β_m is informative about the ages at which divorce matters most for children's human capital formation. Third, the magnitude of $\beta_0 = \sum_{t=0}^{T} \gamma_m$ (the impact of a parental divorce shortly after birth) provides an estimate for the effect of being raised in a divorced family for your

entire childhood. This estimate indicates the degree to which the difference in children's outcomes between always married and divorced families are due to family structure rather than selection. If divorce effects are homogeneous across children within a birth cohort and parent income groups, $\beta_0 = 0$ would imply that all the variation across the two family types is due to selection. If β_0 were equal to the observed differences across the two family types, it would imply that all the variation reflects a causal effect of divorce.

5.2 Estimating Divorce Effects in Observational Data

We estimate divorce effects by studying families with children of different ages in which the parents change from being married to divorced. In this setup, the error term θ_i in Equation (2) will generally be correlated with the indicator for divorce. For instance, parents who maintain a marriage may also have latent health, wealth, or human capital that produces better outcomes for their children. Estimating Equation (2) in an observational sample of children who experience a parental divorce yields a regression coefficient

$$b_m = \beta_m + \delta_m \tag{3}$$

where $\delta_m = \frac{cov(\theta_i, D_{mi})}{var(D_{mi})}$ is the standard selection effect that measures the extent to which unobserved inputs for children covary with a parental divorce. However, the identification of exposure effects does not require that divorces are orthogonal to a child's potential outcomes. Instead, it is required that when a divorce occurs is orthogonal to a child's potential outcomes. This assumption is formalized as follows:

Assumption 1. Selection effects do not vary with the child's age for divorce: $\delta_m = \delta$ for all m.

Assumption 1 allows for the possibility that the families who have a divorce differ from those who don't, but it does require that the extent of such selection does not vary with the age of the child when parents divorce. Using this assumption, we can obtain consistent estimates of divorce exposure effects $\gamma_m = \beta_m - \beta_{m-1} = b_m - b_{m-1}$ from Equation (2) even in observational data because the selection effects δ cancel out when estimating

the exposure effect. We can also estimate the selection effect itself by examining the outcomes of children whose parents divorce after their outcomes are measured. For example, if income is measured at age 24, the estimated "effect" of divorce at ages over 24 does not have a causal effect on children's outcomes at age 24.[17] Therefore, $b_m = \delta$ for $m > T$ under Assumption 1. Using the estimated selection effect, we can identify the causal effect of divorce at age m as $\beta_m = b_m - b_{T+1}$. These identified parameters, β_m, allow us to understand how divorce impacts children at different stages of their life cycle.

5.3 Baseline Specification for Estimating Divorce Effects

Using the framework above as a guide, we can estimate b_m from the age of one to 27. To do this we use the following specification:

$$y_{cji} = \sum_{t=1}^{27} b_m D_{mji} + \alpha_j + \gamma_c + X_i + \varepsilon_i, \tag{4}$$

where y_{cji} denotes the adult outcome for child i in family j from birth cohort c, D_{mji} is an indicator for child i's parents getting divorced when the child is age m, α_j is a family fixed effect, γ_c is a birth cohort fixed effect, and X_i is a vector of controls including an indicator for sex, birth order fixed effects, and birth spacing fixed effects. The main adult outcomes used are income rank and log income at age 25 along with indicators for having a teen birth, attending college in 2010, being incarcerated in 2010, and being married at the age of 25. Equation (4) can be interpreted as an analog of the specification in Equation (2) estimated on observational data.

The coefficient of interest, b_m, can be interpreted as in Equation (3). The coefficient, b_m, estimates the effect of divorce at a given age combined with the selection effect. When the coefficient b_m is differenced with b_{T+1} (i.e. the divorce effect when $m > T$) we obtain the causal effect of divorce under Assumption 1. For this analysis, we will use b_m for $m > 20$ to estimate the selection effect. Note that since the main specification includes family fixed

[17] This may not hold if factors that influence divorce (e.g., financial hardship, negative parental health shocks, separation, etc) predate the timing of divorce and also impact children's outcomes. In this case, the estimated selection effect would be overestimated and our estimated exposure effect would be an underestimate of the true effect.

effects, if the majority of the selection effect is driven by across-family selection, then the selection effect may be small and b_m for $m > 20$ will be close to zero. The divorce exposure effect at age m can be obtained by differencing b_m and b_{m+1}.

6 Results

In this section, we present our results for the effect of divorce on children's adult outcomes. To do this we use the empirical framework outlined above and estimate Equation (4). For all these results, we use our main analysis data set, which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. This data includes 4.5 million children who experienced divorce and over 1 million sibling pairs who experienced divorce. We focus our analysis on children's income but also estimate the effect of divorce on teen birth, college attendance, incarceration, and whether the child is married. We show the results are robust to different specifications, variable definitions, and ages. We then provided evidence for heterogeneous divorce effects by race and ethnicity, family income level, and gender. Lastly, we provide evidence against potential threats to the identification.

6.1 Divorce Effects on Income

We start by estimating the effect of divorce on children's family income rank at age 25. To do this we estimate Equation (4) in which ages are binned in five-year intervals. The coefficient, $\hat{b}_m$, for each five-year age interval indicator is reported in Table 2 using a varying set of controls. The omitted age range is 26 to 27. Estimates for each age (i.e. $\hat{b}_m$ for ages 1 to 27) are reported in Figure 7 and discussed in Section 6.2. Column (1) of Table 2 reports the coefficient for each five-year age interval indicator while only including birth cohort fixed effects. The coefficient on the binary variable for a parental divorce between the ages of 0 and 5 is 0.067 and indicates that the income rank at 25 of children who experience a divorce in the first five years of life is 6.7 percentile points lower than those that experience a parental divorce at the age of either 26 or 27. As outlined in Equation (3), this estimate

includes the effect of divorce and potentially any selection effect. Divorce effects estimates at older ages should just include the selection effects. We used divorces that occur between the ages of 21 and 25 to estimate the selection effect. With only cohort fixed effects the divorce effect on family income rank at 25 for children who experience a divorce between the ages of 0 to 5 is 5.5 percentile points. This effect monotonically declines to 1.5 percentile points for a parental divorce between the ages of 16 and 20.

Column (2) of Table 2 includes a family fixed effect such that all estimates come from comparing siblings who had different exposures to divorce within the same family. While siblings differ in exposure to divorce due to their age differences, they share many common factors including a similar initial environment as well as an inherited endowment from the same parents arising from parents' fixed characteristics. When family fixed effects are included, the estimate for the coefficient on parental divorce between the ages of 0 and 5 declines to 0.024, but is still highly statistically significant. In addition, the selection effect as measured by divorces at ages 21 to 25 goes to zero suggesting a large share of the selection effect is across families and not within families. These estimates say that a divorce at ages 0 to 5 decreases children's income by approximately 2 percentage points. This effect monotonically decreases as the age of the divorce increases. Columns (3) through (5) include additional controls for sex, birth order, and birth spacing between siblings. These divorce effect on income rank for younger children of 2 percentile points is highly stable across these specifications. The fully saturated model in Column (5) is our preferred specification and will be used through the results unless otherwise indicated.

While income rank has many desirable properties (Chetty et al., 2014c), family income rank at the age of 25 is chosen somewhat arbitrarily. Table 3 reports estimates from our preferred specification in Column (5) of Table 2 for different measures of income at the age of 25. Columns (1) and (2) of Table 3 report the divorce effect for each age interval on dollar values of children's family income and individual income at the age of 25, respectively. For both outcomes, the effect of divorce during the first five years of life is approximately $2,500 and statistically significant at the 5 percent level. With a mean family income of $38,020 (and a median of $28,860) the effect for young children is a 7.4 percent decrease in

income. This effect is monotonically decreasing to a statistically insignificant decrease of $500 dollars for children who experience a parental divorce in their early 20s. This effect is similar in size and pattern to the divorce effect on family and individual log income in columns (3) and (4) which find a divorce effect of approximately an 8 percent reduction in income for the youngest age interval. Columns (5) and (6) also show that family and individual income rank give nearly identical estimates.

In Table 4 we show the effect of divorce differs depending on the age at which income is measured. The table reports the effect of divorce on children's family income rank from ages 23 to 27 using a balanced sample. For ages 23 and 24 we find no evidence of a divorce effect across all divorce age intervals. However, starting at age 25 we start to see divorce effects for younger age intervals that continue to grow up to when income is measured at the age of 27. This pattern is in line with prior work in which income effects are not found for income that is measured when individuals are in their early 20s and then grow through their late 20s (Chetty et al., 2014a, 2016). This result likely stems from the fact that many individuals with high expected lifetime earnings have reduced income in their early to mid-20s due to the important role of postsecondary education. While the divorce effect grows between the ages of 23 and 27 for children who experience a divorce at younger ages, the effect of divorce for children who experience a divorce after 20 remains close to zero and statistically insignificant.

6.2 Divorce Effects on Additional Outcomes

We also study how divorce affects other important adult outcomes including having a teen birth, attending college, being incarcerated, and getting married. Figure 7 plots the effect of divorce on these outcomes for each year and Table 5 reports the effect of divorce at five-year age intervals. In addition to reducing income, we find that experiencing a parental divorce in childhood increases the likelihood of teen birth and incarceration, reduces college attendance, and has little to no impact on getting married.

Panel A of Figure 7 plots the estimated b_m coefficients from Equation (4) for ages 1 to 27 for the outcome variable of having a teen birth. From the ages of 1 to 15, experiencing

a parental divorce increases a child's likelihood of having a teen birth by approximately 0.8 percentage points and is highly statistically significant. After the age of 15, the divorce effect drops precipitously and by the age of 20 is indistinguishable from zero. This suggests that for teen birth there is little to no selection effect with the inclusion of family fixed effects. Due to the minimal selection effect, nearly all of the 0.8 percentage point effect of divorce at younger ages appears to be coming from the causal effect of divorce. With a base rate of having a teen birth at 1.2 percent, the effect of divorce on teen birth is large and increases teen birth by roughly 50 to 60 percent. Column (1) of Table 5 reports similar results when using five-year age intervals.

Panel B plots the divorce effects by age for whether a student is attending college in the 2010 Census. Children who experience a divorce before the age of 18 are on average 4 percentage points less likely to attend college with some volatility in the estimate during the first 8 years. After 18 the effect starts to diminish and becomes indistinguishable from zero around the age of 25. This again suggests that the inclusion of family fixed effects largely eliminates the selection effect. Because the measure of college attendance is an indicator for attending college in 2010 the base rate of college attendance is low at 9 percent. Therefore, while 4 percentile points may appear a modest effect, divorce reduces the measure of college attendance by just over 40 percent, similar in magnitude to the effect size of teen birth. This large negative effect could be partially explained by the large reduction in financial resources shown in the event studies.

Similar to our main estimates for income in Table 2, Panels C and D plot the divorce effect by age for family income rank and log family income and find a negative effect of divorce on income. Except for the first few years of life, these results appear to have a linear exposure effect in contrast to the results for teen birth and college attendance. It appears that children exposed to divorce for the entirety of their childhood have reduced income of approximately 4 percentile points, or 9 percent for log income. The effect of divorce is reduced for older ages and approaches zero for children in their late teens.

For incarceration in Panel E, the effect of divorces over age has an inverted U-shaped pattern. The effect of divorce on being incarcerated on the day the Census was taken in

2010 remains relatively small (although positive) over the first 5 years of children's lives. However, from the ages of 5 to 20, divorce appears to increase the likelihood of being incarcerated by 0.15 to 0.25 percentage points. Since only 0.46 percent of individuals in the sample are incarcerated, this effect is quite large and is equivalent to a 33 to 54 percent increase in the likelihood of being incarcerated. Again, similar in magnitude to the effect of divorce on teen birth and college attendance. This effect diminishes around the age of 20 and appears indistinguishable from zero after 25.

Lastly, Panel F shows that there is little to no effect of divorce on the likelihood a child is married at the age of 25. The null results are able to rule out divorce effects of roughly plus or minus 2 percentage points. However, since only 18 percent of children in our sample are married by the age of 25, it is possible that an effect of divorce may appear as a larger fraction of the sample is married.

6.3 Divorce Effects by Group

In this subsection, we report the estimated effect of divorce for different groups. We provide heterogeneity analysis by (i) income tercile, (ii) race and ethnicity, (iii) sex, and (iv) whether a stepmother or stepfather enters the family. For this analysis we estimate the effect of divorce using Equation (4) in which ages are binned in five-year intervals and interacted with an indicator for one of the above listed subgroups using the fully specified model analogous to Column (5) of Table 2.

Table 6 reports the effect of divorce for each income tercile. For most outcomes, the negative effect of divorce is much larger (oftentimes several fold larger) for younger children who experience a parental divorce and were in the bottom tercile of the parent family income distribution. However, this is also true for children who experienced a divorce while older suggesting that the larger effect for low-income children may be largely driven by the selection effect. Similar to the heterogeneity found by income tercile, Table 7 shows the heterogeneity of the divorce effect by race and ethnicity. Similar to income, divorce effects are much larger for young Black and Hispanic children who experienced a divorce, but are also much larger for older Black and Hispanic children who experienced a divorce.

In contrast with recent evidence on the relative importance of family structure for boys, Table 8 shows that in general the effect of divorce appears to be similar for boys and girls. However, there appear to be two exceptions for the effect of divorce on teen births and getting married. We find that the effect of divorce on teen birth is approximately 50 to 70 percent smaller for boys than it is for girls. This differential effect may arise due to divorce differentially affecting teen behavior by gender. Alternatively, since teen birth is measured by whether the focal child claims a dependent who would have been born while the focal child was a teenager, boys may be much less likely to claim a dependent born via a teen birth than girls.[18] In addition, the results show that girls who experience divorce at a young age are less likely to be married than boys. The differential effect of divorce on marriage in the first five years of life is 2.4 percentage points (or 14 percent). This differential effect shrinks as the age at divorce increases and is indistinguishable from zero in later years.

Lastly, we test whether children exposed to divorces that result in the addition of a stepparent differ from those that do not. While adding a stepparent may improve financial resources and increase time investments for a child, prior research has suggested that stepfamilies can also be a disruptive force in a child's life (Daly and Wilson, 1980; Russell, 1984; Daly et al., 1988; Daly and Wilson, 1994). Table **??** and **??** report the effect of divorce by whether or not a divorce results in a stepfather or stepmother, respectively. For divorces that resulted in a stepfather, the negative effect on teen births appears to be highly mitigated. However, adolescents who experience a divorce that results in a stepfather also have reduced marriage rates. As shown in Table **??** there appears to be little heterogeneity by whether a divorce results in a stepmother.

6.4 Threats to Identification

When examining the effect of divorce on children's outcomes, the usual threat to identification is that families that select into divorce are different in unobserved ways. We

[18] It should also be noted that we cannot distinguish between girls claiming a biological child as a dependent and claiming a sibling or other relative.

account for unobserved family differences using within-family comparisons and by differencing out the selection effect by using divorces that occur when children are older. Our identification compares the children of divorced unions to one another, avoiding family selection by exploiting the *timing* of divorce among siblings. Therefore, the primary threat to identification is if parents are more likely to divorce when younger children have worse expected outcomes than their older siblings, a particular kind of within-family selection, and this varies with the timing of the divorce.

We examine within-family selection as an explanation for our estimates in two ways. First, we look at how the gap in outcomes between younger and older children of divorce relates to the difference in their exposure to the divorce (i.e., their age difference). For figure **??** we regress the difference in income between the older and younger child on indicators for the birth spacing between the older and younger siblings (i.e., the difference in age). As can be seen in the figure, we find that the gap in outcomes between younger and older children of divorce is proportional to the difference in their exposure to the divorce. The exposure effect of divorce on income rank, found by taking the slope through the points in the figure, is 0.3—similar to the 0.2 exposure effect found from our estimates from Equation (4) and presented in Figure 7 and Table 2. Typically, selection effects would present themselves as lower outcomes for all younger children, no matter their age difference, with no gradient in exposure. We see the opposite—a strong gradient with no level reduction in outcomes for younger siblings. These results suggest that this particular type of within-family selection is limited.

Second, we also test for an association between earlier divorce and markers of disability like residence in a group home or a psychiatric hospital. The results of this test are reported in Table A.1. We do not find these markers of disability correlating with divorce. This again suggests that within-family selection into divorce based on a couple's second child having a disability is likely limited. Overall, these two pieces of evidence suggest that within-family estimates for the effect of divorce remove the majority of the selection effect and the within-family selection is fairly small.

7 Conclusion

In this paper, we provide a portrait of how family life changes at the time of divorce and how divorce impacts the long-run adult outcomes of children. We find evidence that families experience material declines at the time of divorce as measured by household and neighborhood income. On average, spending an additional year in a married family increases a child's income rank in adulthood by approximately 0.2 percentiles, or about 0.4 percent. These effects scale so that a child whose family remained intact throughout his or her upbringing would earn 9 percent more than a child whose family was divorced when very young. In the cross section, children raised by stable marriages during childhood earn 36.0 percent more than children whose parents divorce in early childhood. Our results suggest that a quarter of the cross-sectional gap is attributable to the causal pathway of family structure.

We find similar effects when looking at a range of other long-term outcomes. Childhood divorce increases the risk of teen birth by 0.9 percentage points (73 percent), with girls experiencing the largest risks when parents divorce between age one and fifteen. Divorce exposure at these ages also increases the risk of incarceration by 0.2 percentage points (43 percent). Childhood divorce reduces the likelihood of college attendance in 2010 by 4 percentage points (44 percent). In contrast, we find no evidence that divorce affects employment, marriage, or mortality.

As with most social determinants of outcomes, we find heterogeneous effects of divorce by parental income rank and race, with children from poorer families and children of color experiencing worse impacts of divorce compared with richer children and those who are white. In addition, we show that our findings are not driven by selection of parents into divorce in terms of fixed family observables, nor by children's characteristics that would be reflected in worse expected outcomes.

Our findings have implications for views on family dysfunction and divorce. First, we find that family structure matters for human capital formation: the differences we see in outcomes across divorced families can be disentangled from the impacts of selection

through the analysis of siblings within the same family. Second, divorce as an event matters, separate from family dysfunction, due to differences it creates in childhood environment, including household income, neighborhood, and exposure to stepfamily. Family structure changes that children experience just before entering the labor market appear to have little impact on outcomes. Finally, because divorce simultaneously has a larger negative effect on children's adult outcomes and is more common among low-income, Hispanic, and Black families, divorce likely exacerbates preexisting socio-economic inequalities.

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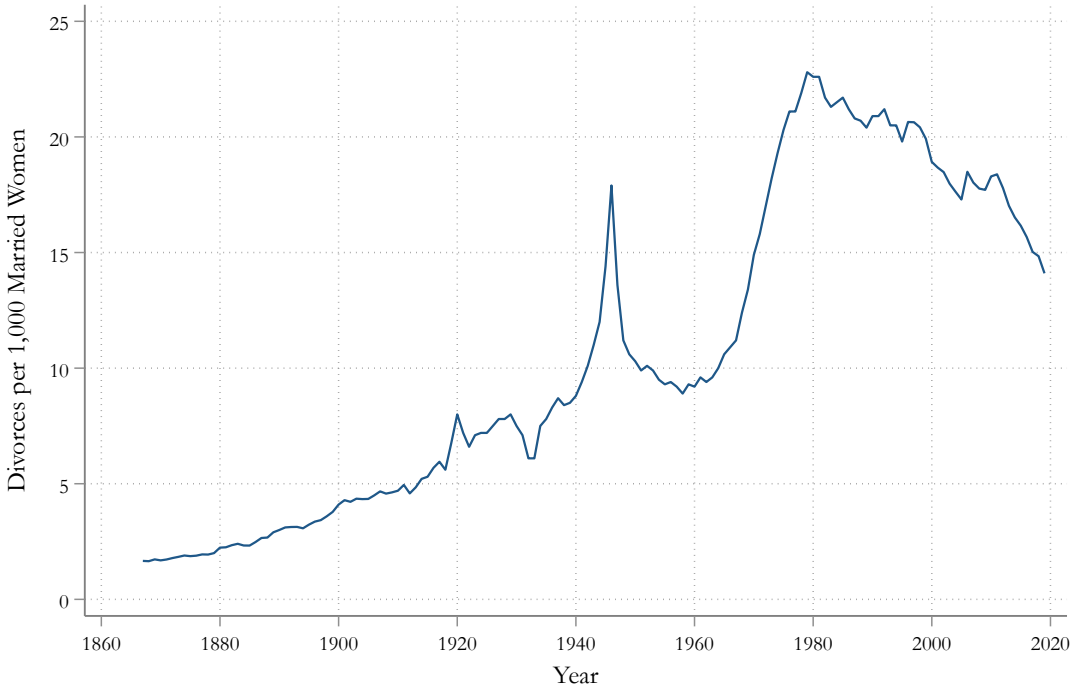
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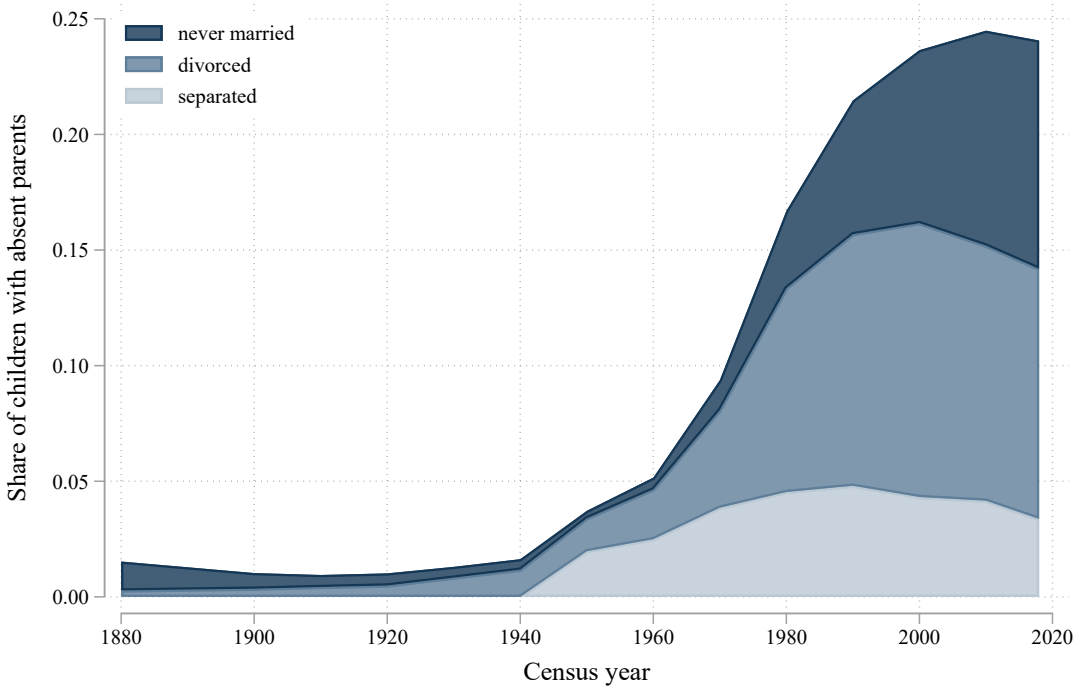
Figures and Tables

Figure 1: Divorces per 1,000 Married Women, 1867-2010



Notes: The above figure uses data from Kennedy and Ruggles (2014) extend to 2019. The figure shows the number of divorces per 1,000 married women from 1867 to 2019. Data sources for the figure include: 1867-1919 number of divorces, National Office of Vital Statistics (1949: Part 1, Table CT); 1920-1995, Haines (2006); 1996-2019 number of divorces, National Center for Health Statistics (2012); 1867-1919, 1996-2010 proportion married females estimated from Ruggles et al. (2012); 2011-2019 proportion married females estimated from the American Community Survey.

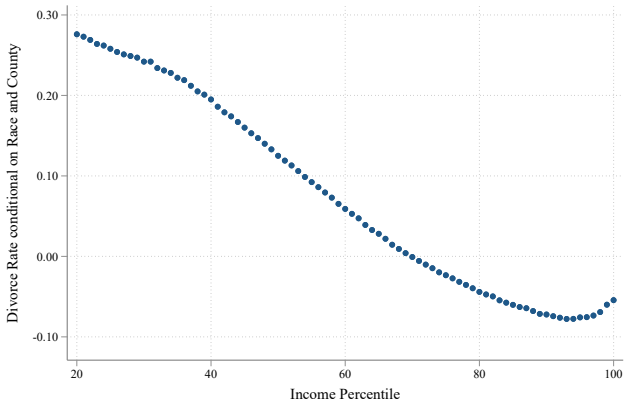
Figure 2: Fraction of Children Living in Single Parent Household



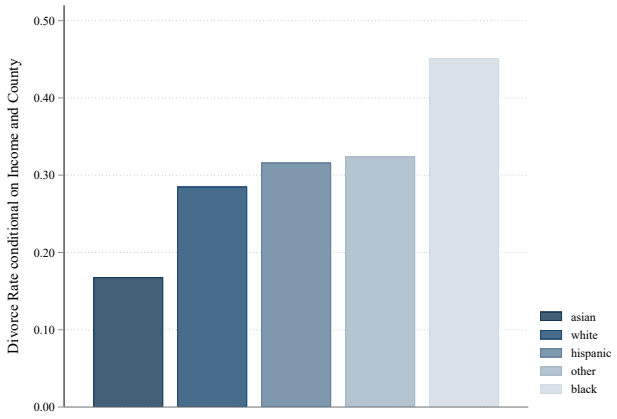
Notes: The figure shows the fraction of children in a given Census year whose parents were currently separated, divorced, or never married. Data source: Census data from 1880 to 2018. Analogous figures for Black and white children can be seen in Figure A.1.

Figure 3: Divorce Rate by Income and Race

(a) Income



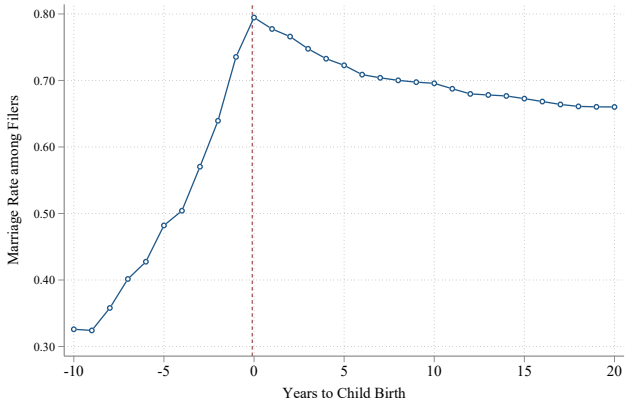
(b) Race



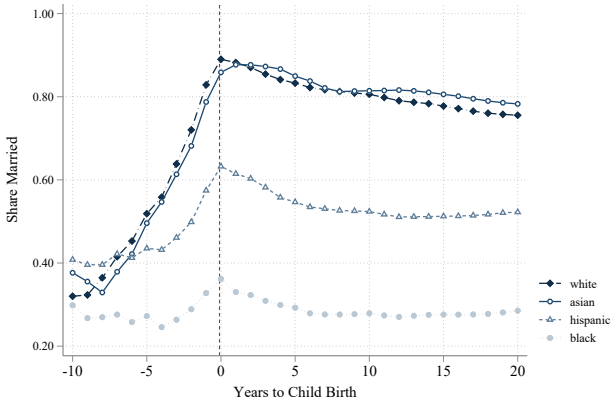
Notes: The figures show residualized divorce rates by income and race. Both panels use data on children born between 1988 and 1993 who were first claimed by married parents. For Panel A, we regress an indicator for whether a child experienced a parental divorce prior to 2018 on Census tract and race fixed effects. The average residual is then plotted for each family income percentile in 2000. The bottom 20 percentiles are omitted due to reporting zero family income. For panel B, we regress an indicator for whether a child experienced a parental divorce prior to 2018 on Census tract and income percentile fixed effects. The average residual for each race or ethnicity is reported with the average divorce rate added back in to facilitate interpretation. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Figure 4: Marriage Over the Child's Life Cycle

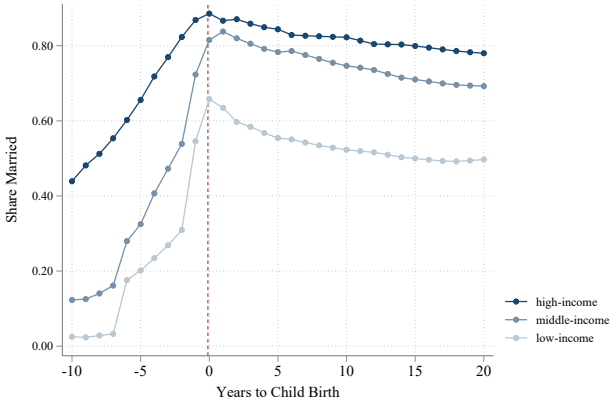
(a) All



(b) Race

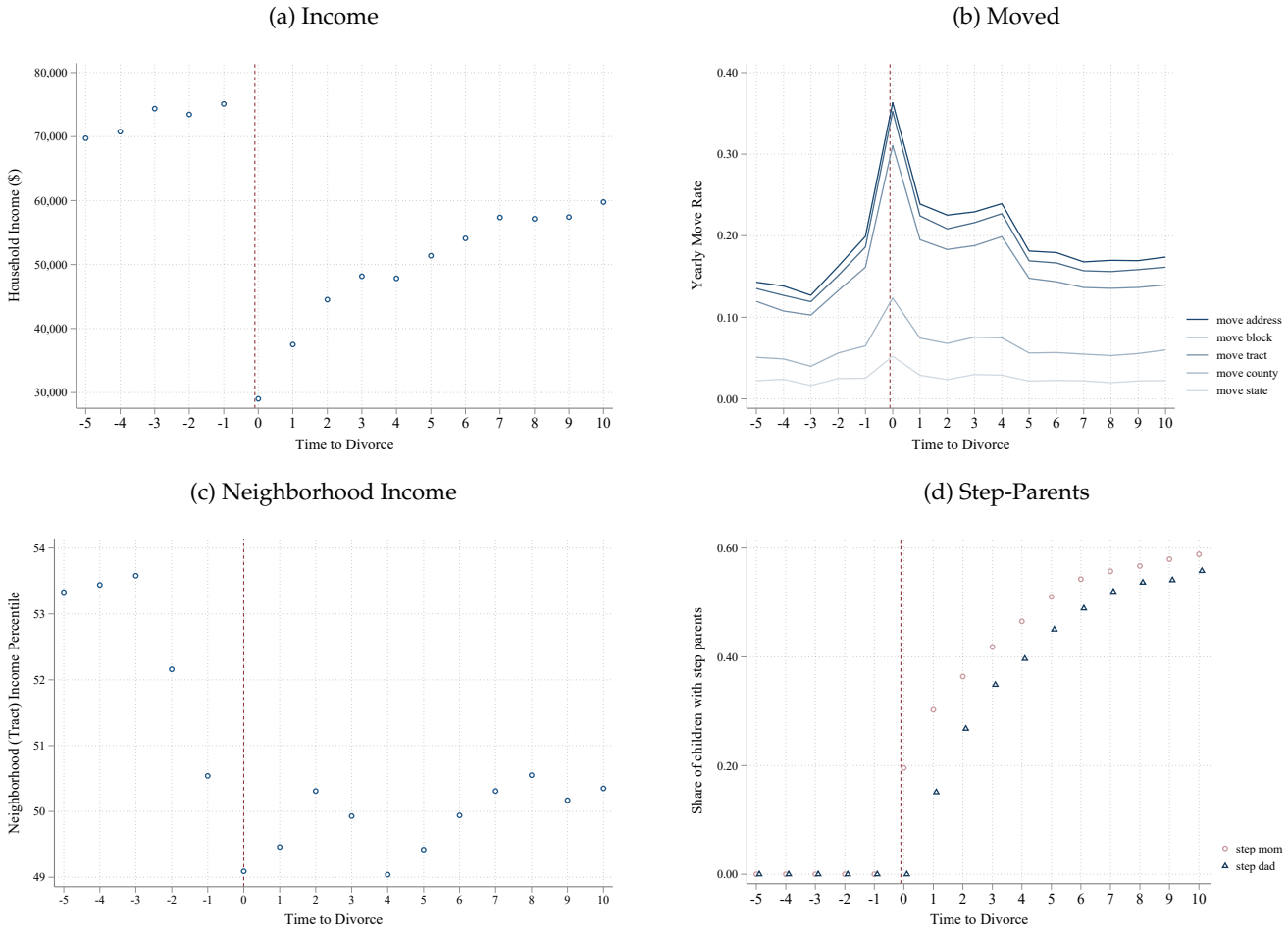


(c) Income



Notes: The figures plot the average marriage status of a child's mother for each age of the child. All panels use data on children born between 1988 and 1993. Panel A reports the fraction of children's mothers that are married in the year relative to the child's birth. Panels B and C, report analogous results by race or ethnicity and by family income tercile, respectively. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

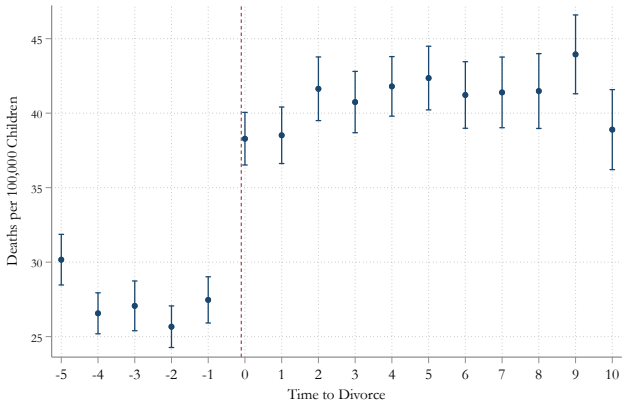
Figure 5: Event Studies Around Divorce



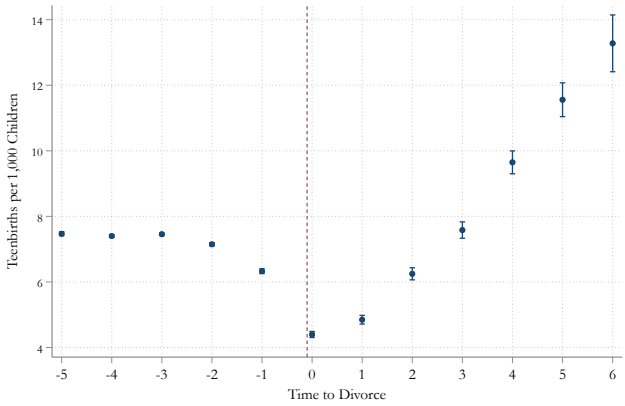
Notes: The figures show event study plots for the indicated outcomes around the time of divorce. All panels use data on children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Panel A reports the average household income for the household that claims the child in the year relative to the parental divorce. Panel B reports the fraction of children that move to a different location in a given year relative to the divorce. Each line reports the fraction of children that moved out of either their address, Census block, Census tract, county, or state. Panel C reports the average household income percentile for the Census tract that children lived in during a given year relative to the divorce. Panel D reports the cumulative fraction of children who have a stepmother or stepfather enter the family by the indicated year relative to the divorce. By construction, this fraction is zero prior to the year of the divorce. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Figure 6: Event Studies on Child Mortality and Teenbirth

(a) Mortality



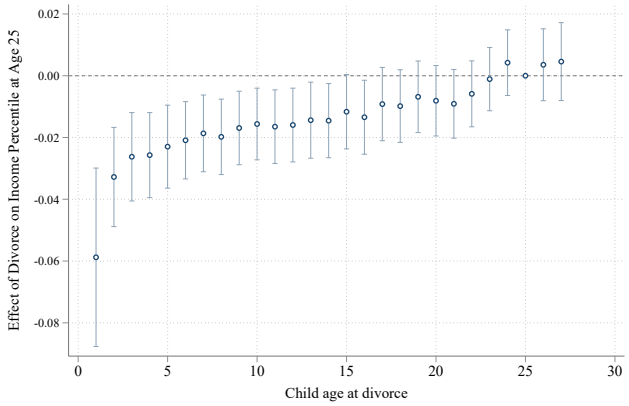
(b) Teenbirth



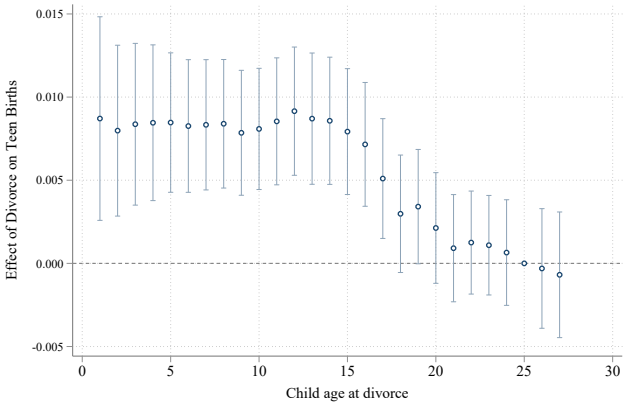
Notes: The figures show event study plots for the residualized child mortality and teenbirth around the time of divorce. The regressions used to residualize the outcomes include age and cohort fixed effects. The mean mortality and teenbirth are added back to facilitate interpretation. All panels use data on children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Panel A reports the residualized mortality of the child in the year relative to the parental divorce in the number of deaths per 100,000 children. Panel B reports the residualized teenbirth of the child in a given year relative to the divorce in teenbirths per 1,000 children. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-0281.

Figure 7: Effects of Divorce by Age at which Parents Divorced

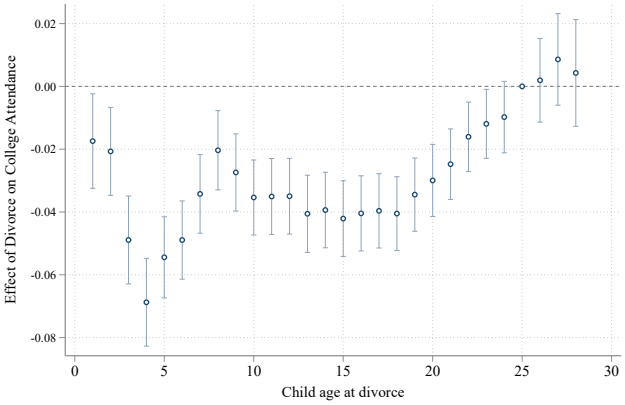
(a) Income Rank



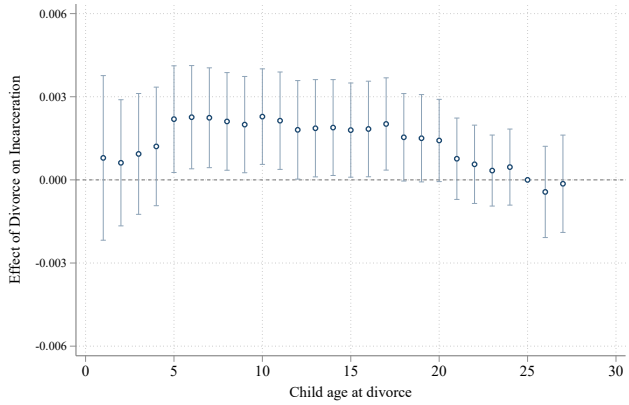
(b) Teenbirth



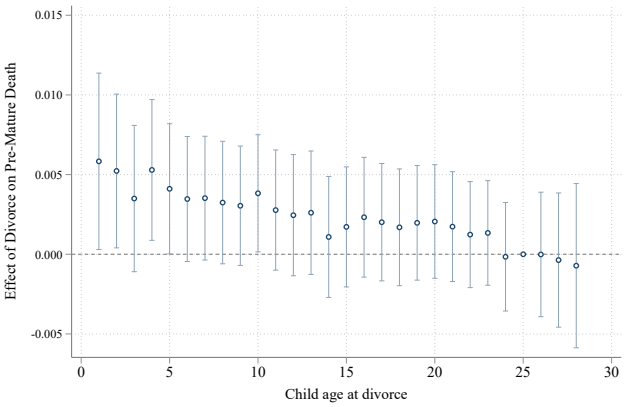
(c) College



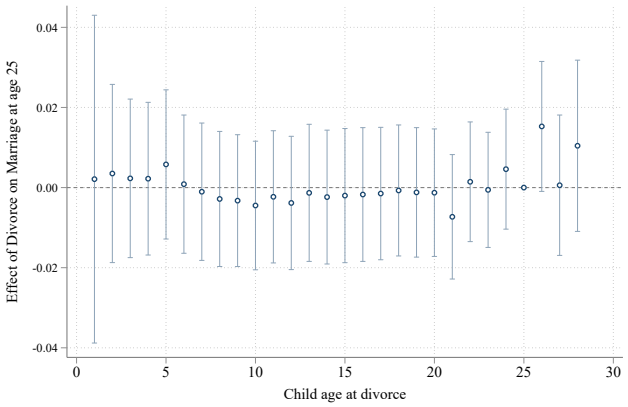
(d) Incarcerated



(e) Mortality



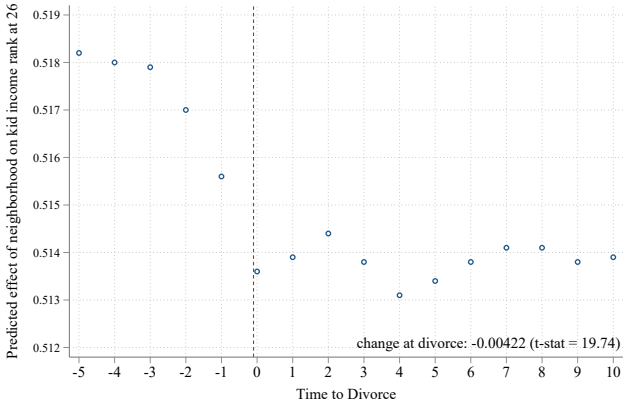
(f) Married



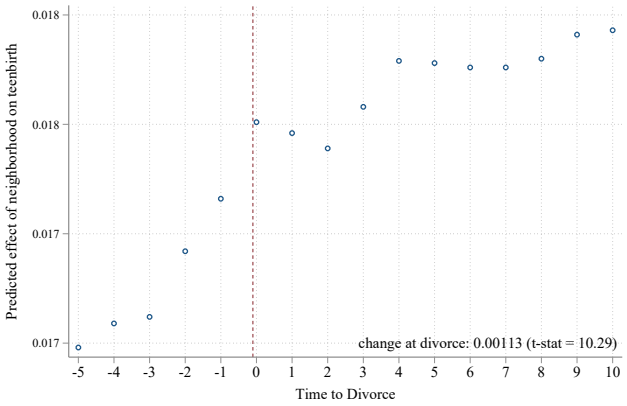
Notes: All panels use our main analysis data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each figure plots the estimated b_m coefficients from Equation (4) for ages 1 to 27 for the indicated outcome. The specification used is analogous to Column (5) of Table 2 and includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey.

Figure 8: Event Studies for Predicted Neighborhood Effects

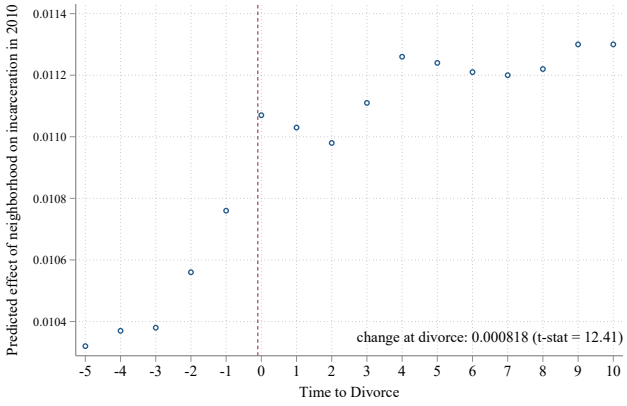
(a) Income Rank



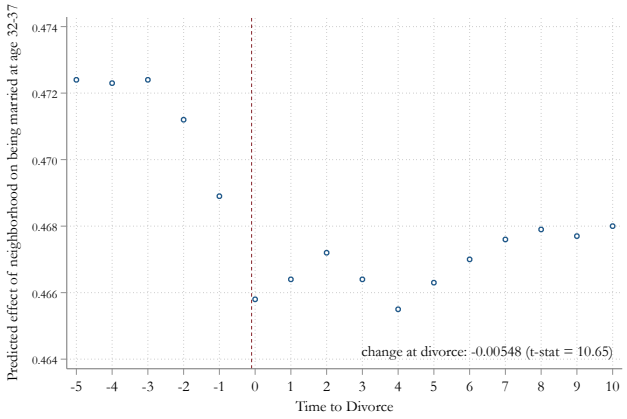
(b) Teenbirth



(c) Incarcerated



(d) Married at Age 32-37



Notes: The figures show event study plots for the indicated outcomes around the time of divorce. All panels use data on children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Panel A reports the average household income for the household that claims the child in the year relative to the parental divorce. Panel B reports the fraction of children that move to a different location in a given year relative to the divorce. Each line reports the fraction of children that moved out of either their address, Census block, Census tract, county, or state. Panel C reports the average household income percentile for the Census tract that children lived in during a given year relative to the divorce. Panel D reports the cumulative fraction of children who have a stepmother or stepfather enter the family by the indicated year relative to the divorce. By construction, this fraction is zero prior to the year of the divorce. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-0281.

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Table 1: Summary Statistics

Variable	Mean (1)	Median (2)	Std. Dev. (3)	Observations (4)
Panel A: Divorced				
Parent Income (Avg. 1995-2000)	71,580	46,550	256,600	5,329,000
Parent Income Rank 2000	0.493	0.484	0.278	5,329,000
Child White	0.682	1.000	0.466	5,329,000
Child Hispanic	0.157	0.000	0.364	5,329,000
Child Black	0.087	0.000	0.282	5,329,000
Child Asian	0.034	0.000	0.182	5,329,000
Child Working at 27	0.838	1.000	0.369	2,825,000
Child Family Income at 27	36,290	27,870	225,000	2,825,000
Child Income Rank at 27	0.506	0.509	0.283	2,825,000
Child Married at 27	0.249	0.000	0.433	2,825,000
Child Teenbirth	0.0151	0.0000	0.1219	5,329,000
Child in College in 2010	0.0764	0.0000	0.2657	4,439,000
Child Incarcerated in 2010	0.0046	0.0000	0.0674	4,439,000
Child in Military in 2010	0.0068	0.0000	0.0819	5,329,000
Child Died	0.0123	0.0000	0.1101	5,329,000
Panel B: Unmarried				
Parent Income (Avg. 1995-2000)	22,230	17,730	47,850	2,271,000
Parent Income Rank 2000	0.269	0.241	0.169	2,271,000
Child White	0.249	0.000	0.432	2,271,000
Child Hispanic	0.193	0.000	0.395	2,271,000
Child Black	0.464	0.000	0.499	2,271,000
Child Asian	0.019	0.000	0.135	2,271,000
Child Working at 27	0.791	1.000	0.407	1,152,000
Child Family Income at 27	22,170	16,500	92,330	1,152,000
Child Income Rank at 27	0.376	0.337	0.247	1,152,000
Child Married at 27	0.108	0.000	0.310	1,152,000
Child Teenbirth	0.0242	0.0000	0.1537	2,271,000
Child in College in 2010	0.0406	0.0000	0.1973	1,776,000
Child Incarcerated in 2010	0.0151	0.0000	0.1221	1,776,000
Child in Military in 2010	0.0038	0.0000	0.0619	2,271,000
Child Died	0.0154	0.0000	0.1231	2,271,000
Panel C: Always Married				
Parent Income (Avg. 1995-2000)	112,500	78,150	344,200	8,417,000
Parent Income Rank 2000	0.665	0.715	0.249	8,417,000
Child White	0.764	1.000	0.425	8,417,000
Child Hispanic	0.115	0.000	0.319	8,417,000
Child Black	0.038	0.000	0.191	8,417,000
Child Asian	0.056	0.000	0.230	8,417,000
Child Working at 27	0.858	1.000	0.349	4,459,000
Child Family Income at 27	45,890	36,200	117,200	4,459,000
Child Income Rank at 27	0.581	0.624	0.287	4,459,000
Child Married at 27	0.306	0.000	0.461	4,459,000
Child Teenbirth	0.0061	0.0000	0.0778	8,417,000
Child in College in 2010	0.1290	0.0000	0.3352	7,307,000
Child Incarcerated in 2010	0.0015	0.0000	0.0392	7,307,000
Child in Military in 2010	0.0051	0.0000	0.0711	8,417,000
Child Died	0.0083	0.0000	0.0906	8,417,000

Notes: The data for the summary statistics includes children born between 1988 and 1993. Panel A reports summary statistics for children who were first claimed by married parents and subsequently divorced. Panel B reports summary statistics for children who were first claimed by an unmarried parent. Panel C reports summary statistics for children who were first claimed by married parents and remained married through 2018. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 2: Effect of Divorce on Income Rank for Various Specifications

	Income Rank				
	(1)	(2)	(3)	(4)	(5)
Divorce (Age 0–5)	-0.0674***	-0.0242***	-0.0243***	-0.0241***	-0.0244***
	(0.0009)	(0.0059)	(0.0059)	(0.0059)	(0.0059)
Divorce (Age 6–10)	-0.0393***	-0.0182***	-0.0183***	-0.0182***	-0.0185***
	(0.0008)	(0.0052)	(0.0052)	(0.0052)	(0.0052)
Divorce (Age 11–15)	-0.0388***	-0.0157**	-0.0158**	-0.0157**	-0.0160**
	(0.0009)	(0.0050)	(0.0050)	(0.0050)	(0.0050)
Divorce (Age 16–20)	-0.0276***	-0.0107*	-0.0108*	-0.0107*	-0.0109*
	(0.0009)	(0.0047)	(0.0047)	(0.0047)	(0.0047)
Divorce (Age 21–25)	-0.0121***	-0.00573	-0.00576	-0.00573	-0.00585
	(0.0009)	(0.0040)	(0.0040)	(0.0040)	(0.0040)
Cohort FE	X	X	X	X	X
Family FE		X	X	X	X
Sex FE			X	X	X
Birth-order FE				X	X
Birth-spacing FE					X
R-squared	0.00	0.81	0.81	0.81	0.81
Adj. R-Squared	0.00	0.18	0.18	0.18	0.18
Observations	4,552,000	4,552,000	4,552,000	4,552,000	4,552,000
Families	3,519,000	3,519,000	3,519,000	3,519,000	3,519,000

Notes: This table reports the effect of divorce at different age intervals on children's family income rank at the age of 27. This analysis uses our main analysis data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column reports estimates for the effect of divorce from Equation (4) in which ages are binned in five-year intervals with varying controls. The fully saturated specification in Column (5) includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 3: Effect of Divorce on Different Types of Income Measures

	Family Income (1)	Individual Income (2)	Family Log Income (3)	Individual Log income (4)	Family Income Rank (5)	Individual Income Rank (6)	Working (7)
Divorce (Age 0–5)	-2832*	-2416*	-0.0865**	-0.0781**	-0.0244***	-0.0232***	-0.00543
	(1,192)	(1,072)	(0.0264)	(0.0287)	(0.0059)	(0.00586)	-(0.00744)
Divorce (Age 6–10)	-2279*	-1,818	-0.0643**	-0.0566*	-0.0185***	-0.0181***	-0.0065
	(1159)	(1,048)	(0.0234)	(0.0255)	(0.0052)	(0.00523)	-(0.0066)
Divorce (Age 11–15)	-1,832	-1,334	-0.0537*	-0.0455	-0.0160**	-0.0158**	-0.00711
	(1,161)	(1,042)	(0.0224)	(0.0244)	(0.0050)	(0.00502)	-(0.00635)
Divorce (Age 16–20)	-1,023	-767	-0.0348	-0.0255	-0.0109*	-0.0108*	-0.00609
	(1,139)	(1,055)	(0.021)	(0.0229)	(0.0047)	(0.00472)	-(0.00598)
Divorce (Age 21–25)	-676	-423	-0.0207	-0.00798	-0.00585	-0.00584	-0.00302
	(1,073)	(1,028)	(0.0175)	(0.0191)	(0.0040)	(0.00396)	-(0.00499)
R-squared	0.81	1.00	0.82	0.82	0.81	0.81	0.79
Adj. R-Squared	0.15	0.99	0.14	0.14	0.18	0.18	0.09
Observations	4,552,000	4,552,000	4,039,000	3,947,000	4,552,000	4,552,000	4,552,000
Families	3,519,000	3,519,000	3,202,000	3,144,000	3,519,000	3,519,000	3,519,000

Notes: This table reports the effect of divorce at different age intervals on different measures of income. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 4: Effect of Divorce on Income Rank by Age

	Income Rank				
	Age 23	Age 24	Age 25	Age 26	Age 27
	(1)	(2)	(3)	(4)	(5)
Divorce (Age 0–5)	-0.000813	-0.0181	-0.0267*	-0.0328**	-0.0388**
	(0.0125)	(0.0125)	(0.0124)	(0.0125)	(0.0124)
Divorce (Age 6–10)	-0.00181	-0.0176	-0.0248*	-0.0284*	-0.0328**
	(0.0113)	(0.0113)	(0.0113)	(0.0113)	(0.0113)
Divorce (Age 11–15)	-0.000151	-0.0149	-0.0222*	-0.0245*	-0.0284*
	(0.0112)	(0.0112)	(0.0112)	(0.0112)	(0.0112)
Divorce (Age 16–20)	0.00267	-0.0116	-0.0167	-0.0179	-0.0196
	(0.0111)	(0.0111)	(0.0111)	(0.0111)	(0.011)
Divorce (Age 21–25)	-0.000699	-0.00851	-0.00977	-0.00849	-0.00805
	(0.0099)	(0.0099)	(0.00988)	(0.00991)	(0.00987)
R-squared	0.90	0.90	0.90	0.90	0.90
Adj. R-Squared	0.16	0.17	0.18	0.19	0.20
Observations	2,825,000	2,825,000	2,825,000	2,825,000	2,825,000
Families	2,475,000	2,475,000	2,475,000	2,475,000	2,475,000

Notes: This table reports the effect of divorce at different age intervals on children's income rank at different ages. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 5: Effect of Divorce on Adult Outcomes

	Income Rank (1)	Teenbirth (2)	College (3)	Incarcerated (4)	Mortality (5)	Married (6)
Divorce (Age 0–5)	-0.0244***	0.00896***	-0.0608***	0.00210*	0.00385*	-0.00353
	(0.0059)	(0.0019)	(0.0059)	(0.0009)	(0.00183)	(0.0081)
Divorce (Age 6–10)	-0.0185***	0.00904***	-0.0442***	0.00281***	0.00285	-0.00711
	(0.0052)	(0.0016)	(0.0055)	(0.0008)	(0.00165)	(0.0072)
Divorce (Age 11–15)	-0.0160**	0.00948***	-0.0496***	0.00259***	0.00174	-0.00674
	(0.0050)	(0.0015)	(0.0052)	(0.0007)	(0.00158)	(0.0069)
Divorce (Age 16–20)	-0.0109*	0.00560***	-0.0458***	0.00239***	0.00178	-0.00639
	(0.0047)	(0.0014)	(0.0049)	(0.0007)	(0.00148)	(0.0065)
Divorce (Age 21–25)	-0.00585	0.00239*	-0.0217***	0.00116*	0.000924	-0.00803
	(0.0040)	(0.0011)	(0.0042)	(0.0005)	(0.00124)	(0.0055)
Mean DV	0.5146	0.0123	0.0892	0.0046	0.0110	0.1769
R-squared	0.81	0.74	0.81	0.79	0.75	0.80
Adj. R-Squared	0.18	0.00	0.16	0.10	0.05	0.12
Observations	4,552,000	5,329,000	4,439,000	4,439,000	5,329,000	4,552,000
Families	3,519,000	3,926,000	3,408,000	3,408,000	3,926,000	3,519,000

Notes: This table reports the effect of divorce at different age intervals on several different adult outcomes. How each outcome variable is constructed is defined in Section 3.2. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 6: Effect of Divorce by Income Tercile

	Income Rank (3)	Teenbirth (1)	College (2)	Incarcerated (5)	Mortality (5)	Married (6)
Divorce (Age 0–5)	-0.0266**	0.0102***	-0.113***	0.00262	0.00476	-0.00477
	(0.00948)	(0.00258)	(0.0104)	(0.00138)	(0.00295)	(0.0126)
Divorce (Age 0–5) x Middle-Income	-0.00633	-0.000237	0.0266*	0.00113	-0.00132	0.00138
	(0.0122)	(0.00332)	(0.0129)	(0.00171)	(0.0038)	(0.0166)
Divorce (Age 0–5) x Low-Income	0.0183	-0.0056	0.148***	-0.00329	-0.00142	-0.003
	(0.0138)	(0.00463)	(0.013)	(0.00212)	(0.00424)	(0.0192)
Divorce (Age 6–10)	-0.008	0.00834***	-0.0533***	0.00246*	0.00422	-0.0117
	(0.00849)	(0.00222)	(0.00975)	(0.00119)	(0.00269)	(0.0112)
Divorce (Age 6–10) x Middle-Income	-0.0196	0.000895	-0.0107	0.00169	-0.00202	0.00122
	(0.0112)	(0.00298)	(0.0123)	(0.00152)	(0.00354)	(0.0152)
Divorce (Age 6–10) x Low-Income	0.000352	-0.00203	0.0765***	-0.00167	-0.00188	0.00442
	(0.013)	(0.00437)	(0.0125)	(0.00198)	(0.00403)	(0.0181)
Divorce (Age 11–15)	-0.00713	0.00841***	-0.0665***	0.00173	0.0026	-0.00914
	(0.00836)	(0.00213)	(0.00961)	(0.00114)	(0.00266)	(0.011)
Divorce (Age 11–15) x Middle-Income	-0.015	0.000277	0.00331	0.00187	-0.00109	0.000949
	(0.0111)	(0.00289)	(0.0121)	(0.00147)	(0.00351)	(0.015)
Divorce (Age 11–15) x Low-Income	-0.000728	-0.000234	0.0804***	-0.000402	-0.00146	-0.0012
	(0.0129)	(0.00432)	(0.0123)	(0.00195)	(0.004)	(0.0179)
Divorce (Age 16–20)	-0.00451	0.00629***	-0.0605***	0.00161	0.00329	-0.00575
	(0.00794)	(0.0019)	(0.00914)	(0.00105)	(0.0025)	(0.0103)
Divorce (Age 16–20) x Middle-Income	-0.0112	-0.00109	0.00465	0.00142	-0.00275	-0.00143
	(0.0105)	(0.00258)	(0.0115)	(0.00132)	(0.00329)	(0.0142)
Divorce (Age 16–20) x Low-Income	-0.000121	-0.00301	0.0677***	0.0000709	-0.00133	-0.00602
	(0.0124)	(0.0041)	(0.0118)	(0.00183)	(0.00382)	(0.0173)
Divorce (Age 21–25)	-0.00286	0.00421**	-0.0261***	0.00103	0.00117	-0.00669
	(0.0066)	(0.00151)	(0.00777)	(0.000884)	(0.00209)	(0.0086)
Divorce (Age 21–25) x Middle-Income	-0.00545	-0.00252	-0.00403	0.000711	-0.000953	-0.00145
	(0.00885)	(0.00209)	(0.00987)	(0.0011)	(0.00278)	(0.012)
Divorce (Age 21–25) x Low-Income	-0.000328	-0.00392	0.0359***	-0.000927	0.000517	-0.00579
	(0.0106)	(0.00355)	(0.0101)	(0.00156)	(0.0033)	(0.0149)
R-squared	0.81	0.74	0.81	0.79	0.75	0.80
Adj. R-Squared	0.18	0.00	0.16	0.10	0.05	0.12
Observations	4,552,000	5,329,000	4,439,000	4,439,000	5,329,000	4,552,000
Families	3,519,000	3,926,000	3,408,000	3,408,000	3,926,000	3,519,000

Notes: This table reports the effect of divorce at different age intervals by parent family income tercile on several different adult outcomes. How each outcome variable is constructed is defined in Section 3.2. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals and interacted with parent family income tercile using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 7: Effect of Divorce by Race

	Log Income (1)	Teenbirth (2)	College (3)	Incarcerated (4)	Mortality (5)	Married (6)
Divorce (Age 0–5)	-0.0245***	0.0106***	-0.0800***	0.00275**	0.00315	-0.000478
	(0.00643)	(0.00194)	(0.00666)	(0.000932)	(0.00202)	(0.00906)
Divorce (Age 0–5) x Black	0.00643	-0.00208	0.0296	-0.00968	-0.0029	-0.0104
	(0.0189)	(0.00682)	(0.0222)	(0.00524)	(0.00744)	(0.0235)
Divorce (Age 0–5) x Hispanic	0.00638	-0.00934	0.102***	-0.00113	0.00139	-0.0032
	(0.0133)	(0.0056)	(0.0115)	(0.00216)	(0.00441)	(0.0185)
Divorce (Age 0–5) x Asian	0.0396	-0.0014	0.0312	0.00165	0.00168	0.0157
	(0.0249)	(0.00587)	(0.0234)	(0.00279)	(0.00601)	(0.0289)
Divorce (Age 0–5) x Other	0.0155	-0.00425	0.0689	-0.00782	0.00981	0.0131
	(0.0211)	(0.00768)	(0.0411)	(0.00818)	(0.00949)	(0.0274)
Divorce (Age 6–10)	-0.0189***	0.00968***	-0.0546***	0.00289***	0.00253	-0.0062
	(0.00575)	(0.00167)	(0.0062)	(0.000831)	(0.00182)	(0.00807)
Divorce (Age 6–10) x Black	-0.00241	0.00104	0.00615	-0.00479	-0.00265	-0.0114
	(0.0185)	(0.00668)	(0.022)	(0.00517)	(0.00735)	(0.023)
Divorce (Age 6–10) x Hispanic	0.00517	-0.00604	0.0670***	-0.000587	0.000522	0.00153
	(0.0126)	(0.00531)	(0.0112)	(0.00204)	(0.00424)	(0.0175)
Divorce (Age 6–10) x Asian	0.0361	0.000579	0.0376	0.000694	0.00137	0.0195
	(0.0222)	(0.00538)	(0.0221)	(0.00256)	(0.00563)	(0.0253)
Divorce (Age 6–10) x Other	0.0278	-0.00381	0.0474	-0.00563	0.00532	0.0213
	(0.0204)	(0.00729)	(0.0405)	(0.00767)	(0.00914)	(0.0263)
Divorce (Age 11–15)	-0.0176**	0.00979***	-0.0608***	0.00271***	0.0017	-0.00525
	(0.00558)	(0.00157)	(0.00598)	(0.000779)	(0.00176)	(0.00787)
Divorce (Age 11–15) x Black	0.00569	0.00183	0.0166	-0.00423	-0.00351	-0.0103
	(0.0188)	(0.00675)	(0.0221)	(0.00525)	(0.00738)	(0.0233)
Divorce (Age 11–15) x Hispanic	0.00589	-0.00425	0.0660***	-0.000541	0.00021	-0.00659
	(0.0127)	(0.00536)	(0.0111)	(0.00205)	(0.00425)	(0.0176)
Divorce (Age 11–15) x Asian	0.0283	-0.00124	0.0389	-0.000396	0.00159	0.0165
	(0.0223)	(0.00546)	(0.0219)	(0.00248)	(0.00563)	(0.0254)
Divorce (Age 11–15) x Other	0.0295	-0.00212	0.0529	-0.00147	0.00139	0.025
	(0.0208)	(0.00756)	(0.0407)	(0.00792)	(0.00932)	(0.027)
Divorce (Age 16–20)	-0.0126*	0.00586***	-0.0554***	0.00229**	0.00172	-0.00626
	(0.00529)	(0.00141)	(0.00567)	(0.000698)	(0.00165)	(0.00747)
Divorce (Age 16–20) x Black	-0.00209	0.00126	0.0237	-0.00399	-0.0022	-0.0191
	(0.0187)	(0.00661)	(0.0217)	(0.00517)	(0.00729)	(0.0231)
Divorce (Age 16–20) x Hispanic	0.00942	-0.00362	0.0561***	0.000836	-0.000688	0.00417
	(0.0125)	(0.00526)	(0.0107)	(0.00188)	(0.00415)	(0.0175)
Divorce (Age 16–20) x Asian	0.0173	0.00139	0.0274	0.00093	0.00177	0.0175
	(0.0219)	(0.00508)	(0.021)	(0.00232)	(0.00544)	(0.0247)
Divorce (Age 16–20) x Other	0.0242	-0.00358	0.0407	-0.00176	0.00319	0.0153
	(0.021)	(0.0074)	(0.0398)	(0.00767)	(0.00938)	(0.0273)
Divorce (Age 21–25)	-0.00693	0.00295**	-0.0273***	0.00136*	0.000838	-0.00937
	(0.00447)	(0.00111)	(0.00485)	(0.000554)	(0.00139)	(0.00634)
Divorce (Age 21–25) x Black	-0.000575	0.000153	0.0213	-0.00539	-0.00117	-0.00102
	(0.0172)	(0.00589)	(0.0195)	(0.0048)	(0.00671)	(0.0208)
Divorce (Age 21–25) x Hispanic	0.00464	-0.00407	0.0327***	-0.000185	0.000258	0.00662
	(0.0114)	(0.00484)	(0.00935)	(0.00156)	(0.00369)	(0.0159)
Divorce (Age 21–25) x Asian	0.0192	0.000826	0.0154	0.000124	0.00117	0.0164
	(0.0197)	(0.00424)	(0.0183)	(0.0019)	(0.00483)	(0.0216)
Divorce (Age 21–25) x Other	0.00701	-0.00538	0.0184	0.000543	0.00032	0.00913
	(0.0205)	(0.00714)	(0.0370)	(0.00711)	(0.00913)	(0.0267)
R-squared	0.81	0.74	0.81	0.79	0.75	0.80
Adj. R-Squared	0.18	0.00	0.16	0.10	0.05	0.12
Observations	4,552,000	5,329,000	4,439,000	4,439,000	5,329,000	4,552,000
Families	3,519,000	3,926,000	3,408,000	3,408,000	3,926,000	3,519,000

Notes: This table reports the effect of divorce at different age intervals by race and ethnicity on several different adult outcomes. How each outcome variable is constructed is defined in Section 3.2. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals and interacted indicators for race and ethnicity using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 8: Effect of Divorce by Gender

	Income Rank (1)	Teenbirth (2)	College (3)	Incarcerated (4)	Mortality (5)	Married (6)
Divorce (Age 0–5)	-0.0275***	0.0151***	-0.0697***	0.00188*		-0.0159
	(0.0068)	(0.0023)	(0.0071)	(0.0009)		(0.0095)
Divorce (Age 0–5) x Male	0.00595	-0.0120***	0.0176*	0.000433		0.0241**
	(0.0067)	(0.0022)	(0.0073)	(0.0011)		(0.0093)
Divorce (Age 6–10)	-0.0224***	0.0132***	-0.0492***	0.00223**		-0.0165
	(0.0061)	(0.0020)	(0.0067)	(0.0007)		(0.0087)
Divorce (Age 6–10) x Male	0.00755	-0.00809***	0.00982	0.00115		0.0183*
	(0.0063)	(0.0020)	(0.0071)	(0.0010)		(0.0087)
Divorce (Age 11–15)	-0.0193**	0.0134***	-0.0557***	0.00239***		-0.0131
	(0.0060)	(0.0020)	(0.0065)	(0.0007)		(0.0085)
Divorce (Age 11–15) x Male	0.00645	-0.00762***	0.0121	0.00041		0.0123
	(0.0065)	(0.0021)	(0.0072)	(0.0010)		(0.0090)
Divorce (Age 16–20)	-0.0118*	0.00708***	-0.0496***	0.00244***		-0.0104
	(0.0058)	(0.0019)	(0.0063)	(0.0006)		(0.0083)
Divorce (Age 16–20) x Male	0.00178	-0.00282	0.0074	-0.000101		0.00759
	(0.0066)	(0.0021)	(0.0074)	(0.0010)		(0.0092)
Divorce (Age 21–25)	-0.00705	0.00217	-0.0242***	0.00166**		-0.00994
	(0.0053)	(0.0017)	(0.0059)	(0.0006)		(0.0076)
Divorce (Age 21–25) x Male	0.00231	0.0004	0.00486	-0.000964		0.0037
	(0.0068)	(0.0021)	(0.0077)	(0.0010)		(0.0095)
R-squared	0.81	0.74	0.81	0.79		0.80
Adj. R-Squared	0.18	0.00	0.16	0.10		0.12
Observations	4,552,000	5,329,000	4,439,000	4,439,000		4,552,000
Families	3,519,000	3,926,000	3,408,000	3,408,000		3,519,000

Notes: This table reports the effect of divorce at different age intervals by sex on several different adult outcomes. How each outcome variable is constructed is defined in Section 3.2. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals and interacted with an indicator for being male using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

Table 9: Parent Income Effects on Children's Life Outcomes

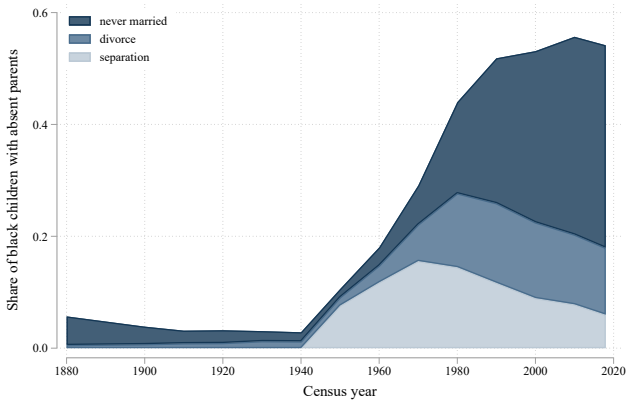
	Income Rank (1)	Teenbirth (2)	College (3)	Incarcerated (4)	Mortality (5)	Married (6)
Log Parent Income (Age 0–5)	0.0084***	-0.0012**	0.0165***	-0.0002	-0.0005	-0.0097***
	(0.0014)	(0.0004)	(0.0022)	(0.0002)	(0.0005)	(0.0020)
Log Parent Income (Age 6–10)	0.0059**	-0.001	0.0422***	0.0001	-0.0003	-0.0215***
	(0.0021)	(0.0006)	(0.0035)	(0.0003)	(0.0007)	(0.0029)
Log Parent Income (Age 11–15)	-0.0011	-0.0006	0.0165***	0.0001	0.0007	-0.0265***
	(0.0024)	(0.0007)	(0.0039)	(0.0004)	(0.0008)	(0.0033)
Log Parent Income (Age 16–20)	0.0071**	-0.0013	0.0170***	0.0001	-0.0005	-0.006
	(0.0023)	(0.0007)	(0.0038)	(0.0003)	(0.0008)	(0.0033)
Log Parent Income (Age 21–25)	0.0159***	-0.0011	0.0298***	-0.0002	-0.001	0.0034
	(0.0022)	(0.0007)	(0.0035)	(0.0003)	(0.0008)	(0.0031)
Mean DV	0.5160	0.0151	0.0764	0.0046	0.0123	0.1802
R-squared	0.82	0.79	0.86	0.81	0.79	0.82
Adj. R-Squared	0.16	0.03	0.27	0.01	0.03	0.15
Observations	5,148,000	5,148,000	4,395,000	4,395,000	5,148,000	5,148,000
Families	4,022,000	4,022,000	3,542,000	3,542,000	4,022,000	4,022,000

Notes: This table reports the effect of ... * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.

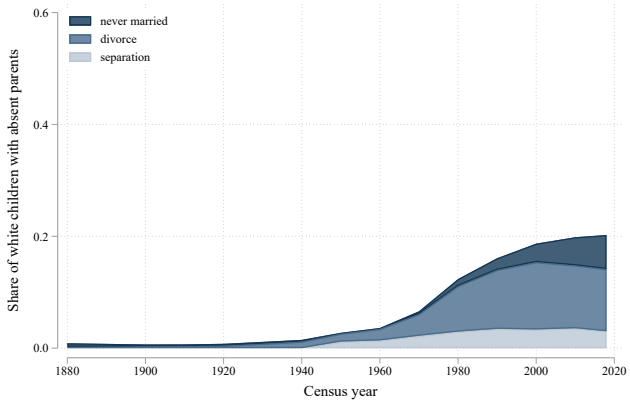
Appendix Figures and Tables

Figure A.1: Fraction of Children Living in Single Parent Household by Race

(a) Black

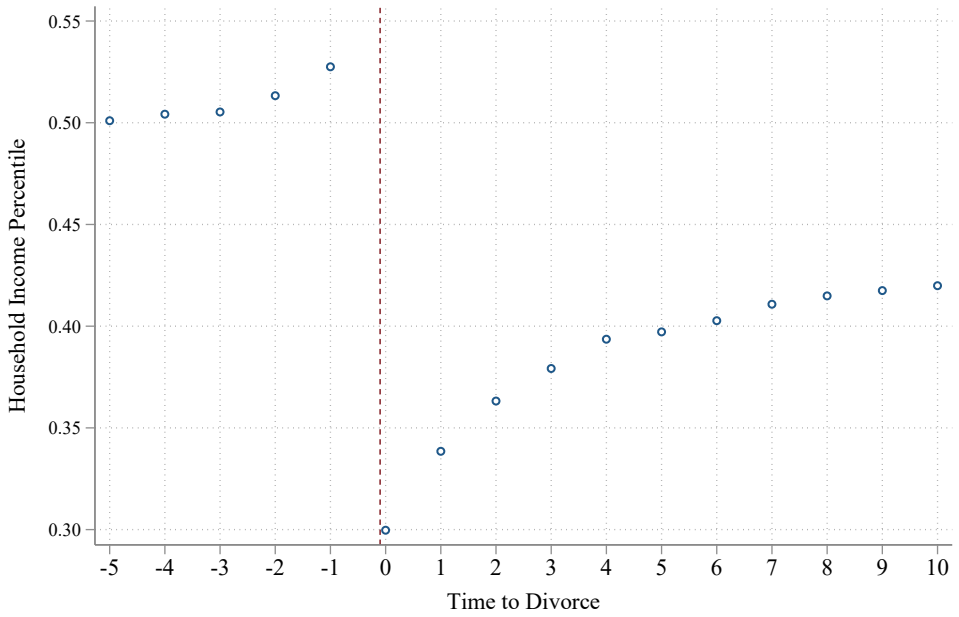


(b) White



Notes: The figures show the fraction of children in a given Census year whose parents were currently separated, divorced, or never married. Panel A reports this information for Black children and Panel B reports for white children. Data source: Census data from 1880 to 2018. Analogous figures for all children can be seen in Figure 2.

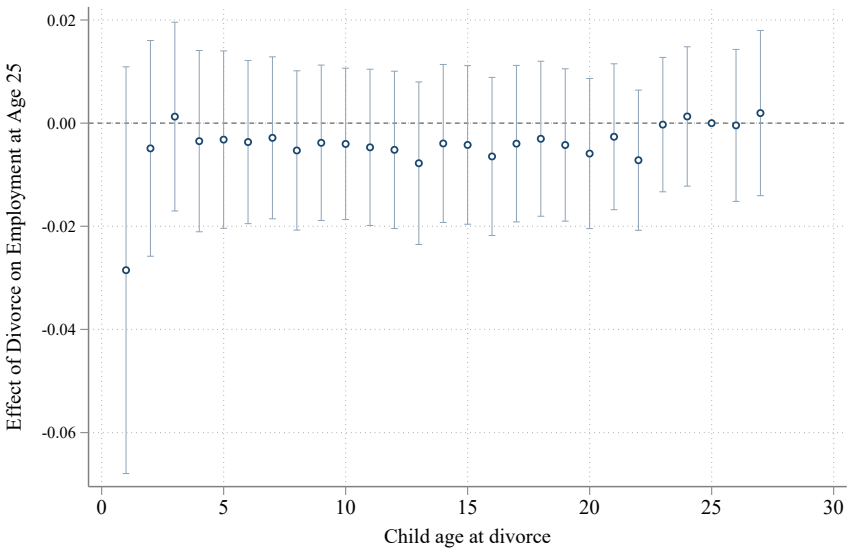
Figure A.2: Change in Household Income Rank at Divorce



Notes: The figure shows the event study plot of household income rank around the time of the divorce. The figure use data on children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. The figure reports the average household income rank for the household that claims the child in the year relative to the parental divorce.

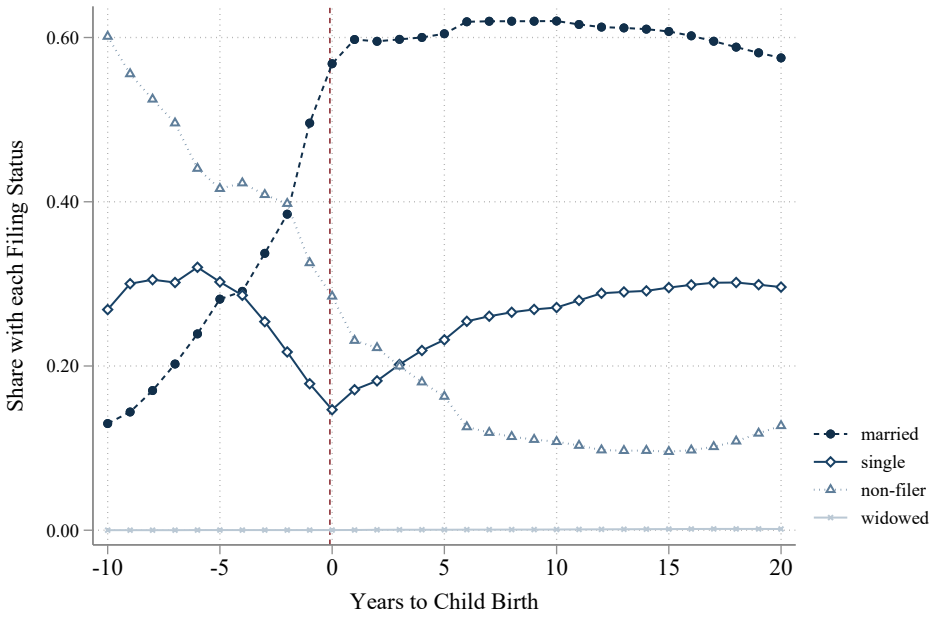
Figure A.3: Effects of Divorce by Age on Working

(a) Working



Notes: All panels use our main analysis data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each figure plots the estimated b_m coefficients from Equation (4) for ages 1 to 27 for the indicated outcome.

Figure A.4: Family Structure by Child's Age



Note: The figure plots the filing status of a child's mother for each age of the child. All panels use data on children born between 1988 and 1993.

Table A.1: Effect of Divorce for Additional Outcomes

	Group Home 2010 (1)	Psychiatric Home 2010 (2)	Military 2010 (3)
Divorce (Age 0–5)	0.000284	0.0000194	0.0019
	(0.000316)	(0.0000925)	(0.00147)
Divorce (Age 6–10)	0.000208	0.0000296	0.00149
	(0.000275)	(0.000079)	(0.00133)
Divorce (Age 11–15)	0.00016	0.0000355	0.00131
	(0.000261)	(0.0000736)	(0.00128)
Divorce (Age 16–20)	0.000099	0.00000494	0.000922
	(0.000232)	(0.0000689)	(0.0012)
Divorce (Age 21–25)	-0.0000386	0.0000347	0.000318
	(0.000182)	(0.0000589)	(0.00101)
R-squared	0.76	0.76	0.73
Adj. R-Squared	0.07	0.08	-0.02
Observations	5,329,000	5,329,000	5,329,000
Families	3,926,000	3,926,000	3,926,000

Notes: This table reports the effect of divorce at different age intervals on several different adult outcomes. How each outcome variable is constructed is defined in Section 3.2. This analysis uses our main data set which includes children born between 1988 and 1993 who were first claimed by married parents that subsequently divorced. Each column estimates the effect of divorce from Equation (4) in which ages are binned in five-year intervals using the fully specified model analogous to Column (5) of Table 2. This specification includes birth cohort fixed effects, family fixed effects, sex fixed effects, birth order fixed effects, and birth spacing fixed effects. * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table A.2: Parent Income Effects on Children's Income

	Income Rank		Log Income		Working
	Age 25	Age 27	Age 25	Age 27	Age 25
	(1)	(2)	(3)	(4)	(5)
Log Parent Income (Age 0–5)	0.0084***	0.0103***	0.0258***	0.0316***	0.0094***
	-(0.0014)	-(0.0022)	-(0.0062)	-(0.0093)	-(0.0018)
Log Parent Income (Age 6–10)	0.0059**	0.0092**	0.0111	0.0256	0.0061*
	-(0.0021)	-(0.0034)	-(0.0092)	-(0.0144)	-(0.0026)
Log Parent Income (Age 11–15)	-0.0011	-0.0001	-0.0029	-0.0022	-0.002
	-(0.0024)	-(0.0041)	-(0.0104)	-(0.0176)	-(0.003)
Log Parent Income (Age 16–20)	0.0071**	0.0109**	0.0198	0.0395*	0.0053
	-(0.0023)	-(0.0040)	-(0.0104)	-(0.0174)	-(0.003)
Log Parent Income (Age 21–25)	0.0159***	0.0181***	0.0509***	0.0550***	0.0072*
	-(0.0022)	-(0.0038)	-(0.0100)	-(0.0165)	-(0.0029)
Mean DV	0.516	0.506	4.44	4.56	0.843
R-squared	0.82	0.88	0.82	0.88	0.80
Adj. R-Squared	0.16	0.18	0.14	0.14	0.09
Observations	5,148,000	3,901,000	4,713,000	3,612,000	5,148,000
Families	4,022,000	3,323,000	3,748,000	3,112,000	4,022,000

Notes: This table reports the effect of ... * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Source: Census Numident; IRS Forms 1040, 1099, and W-2; Decennial Census 2000 and 2010; and American Community Survey. DRB approval number: CBDRB-FY23-CES014-0185.