



DEMOGRAPHIC RESEARCH

A peer-reviewed, open-access journal of population sciences

DEMOGRAPHIC RESEARCH

VOLUME 48, ARTICLE 17, PAGES 439–482

PUBLISHED 23 MARCH 2023

<https://www.demographic-research.org/Volumes/Vol48/17/>

DOI: 10.4054/DemRes.2023.48.17

Research Article

Geographical distance between child and parent after a union dissolution in Sweden, 1974–2011

Jani Turunen

Maria Brandén

Karin Lundström

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Geographical distance between child and parent after a union dissolution in Sweden, 1974–2011

Jani Turunen¹

Maria Brandén²

Karin Lundström³

Abstract

BACKGROUND

Divorce is associated with a weakened relationship between the child and the nonresident parent, usually the father. This loss of contact is likely to be even further exacerbated if this parent lives at a substantial distance from the child.

OBJECTIVE

This paper analyzes how the distance between children and nonresident parents, the year after a parental separation, has changed during a 40-year period in Sweden, and whether this is related to changes in child custody policies.

METHODS

We use Swedish population register data that includes exact geographical coordinates for children and their nonresident parents in the year after separation. We analyze how average distance and the likelihood of living very close to, or very far from, a nonresident parent has changed over this period, using OLS and logistic regression models.

RESULTS

Results show a gradual decrease in the distance between children and nonresident parents from the 1970s until the early 1990s, after which the trend stalled at a low level. In 2011, 50% of all children lived within 2 kilometers of their nonresident parent. We find no evidence of direct policy effects, indicated by any sudden changes in distance after the introduction of a new custody policy. High-income parents have changed their post-divorce residential patterns at a faster pace than low-income parents.

¹ School of Social Sciences, Södertörn University and Stockholm University Demography Unit, Sweden.

Email: jani.turunen@sociology.su.se.

² Stockholm University Demography Unit and The Institute for Analytical Sociology, Linköping University, Sweden

³ Statistics Sweden, Örebro, Sweden.

CONCLUSIONS

Our results indicate a diffusion process where distances between children and nonresident parents gradually decreased until the 1990s.

CONTRIBUTION

This paper demonstrates that the change has not been directly influenced by custody law reforms promoting dual parent responsibility.

1. Introduction

During the last half-century, most western countries have experienced growing family instability. Sweden is no exception. Around one-third of all children have experienced a parental union dissolution by their 15th birthday (Thomson and Eriksson 2013). Even though most parents in Sweden share the legal custody of their common children after a divorce (Statistics Sweden 2009), divorce is associated with a weakened relationship between the child and the nonresident parent, usually the father (Amato and Booth 1996; Haux and Platt 2021; Shapiro and Lambert 1999). This loss of contact is likely to be even further exacerbated if this parent lives at a substantial distance from the child. For instance, research demonstrates that geographical proximity between the child and the nonresident parent is positively related to the level of fathers' involvement (Cooksey and Craig 1998), payment of child support (Manning and Smock 2000), and the overall quality of the parent–child relationship (Smyth, Sheehan, and Fehlberg 2001). Distances between children and nonresident parents are thus an area that warrants attention.

Despite research showing that the distance between children and nonresident parents decreased during the 1990s (Stjernström and Strömgren 2012), what has driven this trend remains unclear. Has it been driven by reforms in family policies promoting the shared custody of children following union dissolution, or is it a reflection of a gradual egalitarianization of post-separation parenthood?

In this paper we present the first comprehensive picture of parent–child residential links over a long period of time, as we analyze how the distance between children and nonresident parents, in the year after a separation, developed in Sweden during the years 1974–2011. We focus particularly on how any change is related to changes in five potentially important child custody policies. We consider the introduction of each of these five reforms as distinct critical junctures, at which a discrete change in the distance between children and their nonresident parent and an increase in the share of nonresident parents living in close proximity might be expected. An alternative hypothesis is that a gradual change occurred in tandem with the diffusion of attitudes of gender equality, which influenced family behaviors. By using a unique data set that includes geographical

coordinates for all children and their nonresident parents in the year after separation for almost 40 years, beginning in 1974, we are able to follow the relevant developments with greater precision and for a substantially longer period than any previous study on the topic (Dommermuth 2018; Stjernström and Strömberg 2012).

2. Background

2.1 Why is parent–child distance important?

A large body of research has shown that divorce or separation is associated with adverse outcomes for children (see for example: Amato 2000, 2010). Loss of contact with the nonresident parent (usually the father) has been shown to negatively impact the wellbeing of the child (Amato and Anthony 2014; McLanahan, Tach, and Schneider 2013), and maintaining a relationship that is characterized by active parenting and high involvement has been shown to greatly benefit the child (Adamsons 2018; Adamsons and Johnson 2013; Amato and Gilbreth 1999; Viry 2014).

Shared physical custody arrangements are also important for children’s wellbeing. On a continuum of engagement between children and nonresident parents, the most intense form of engagement may be viewed as alternating residence between both parental households. Parents who share physical custody of their children are more likely to have an active parenting style than nonresident parents (Bastaitis and Mortelmans 2017; Bastaitis, Ponnet, and Mortelmans 2012) and are likely to have more opportunities to participate in the child’s everyday life than parents whose children’s time in the household is limited to shorter visits. A parent with shared physical custody is likely to have a greater insight into the child’s social life via knowledge about his/her friends and their parents, and greater insight into the child’s education as a result of meeting teachers when dropping off or picking up the child from pre-school or school, or by participating at parent–teacher meetings. These structural features of shared physical custody, affecting both the obligations of and relationships between family members, suggests we should view shared physical custody as a new family form that is different from both traditional two-parent families and traditional divorced families (Thomson and Turunen 2021). This type of post-separation living arrangement is also related to higher child wellbeing than living full-time with one parent (Nielsen 2011, 2014, 2018).

Importantly, shared physical custody with alternating residence on a weekly or bi-weekly basis requires a short geographical distance between parents. When time is spent in both households a geographical proximity between the households is required so that the child can attend the same school and maintain stable contact with peers. A custody arrangement that involves shorter visits on weekends and holidays does not require this

to the same extent, thus allowing a greater distance between households. In a mixed methods study from the Netherlands, Bakker and Mulder (2013) find that increased distance between the households of the separated parents is negatively associated with the likelihood of having a shared physical custody arrangement. The importance of the parent and child living close to each other was also emphasized by the parents in qualitative interviews.

Research demonstrates that geographical proximity between the child and the nonresident parent is positively related to the level of fathers' involvement (Cooksey and Craig 1998) and payment of child support (Manning and Smock 2000). Proximity also affects the quality of the parent-child relationship, since distance restricts the opportunities for, and frequency of, meetings between the child and the nonresident parent (Smyth, Sheehan, and Fehlberg 2001). Research from Sweden has shown that the intergenerational transmission of education between nonresident parents and children is stronger the closer they live to one another, suggesting that distance restricts the transmission of non-material resources from parent to child (Gähler, Jonsson, and Brodin Loftman 2009). Children whose parents have shared physical custody demonstrate lower levels of risk behavior than children of single parents (Carlsund et al. 2013). Interestingly, some contradictory results from Norway show that proximity between highly educated fathers and nonresident children is associated with worse educational and labor market outcomes for Norwegian children (Kalil et al. 2011).

Few studies have analyzed factors that may affect the geographical proximity between children and parents following a union dissolution. However, a handful of studies do exist. Findings from both the Netherlands (Feijten and Van Ham 2007) and the United States (Cooke, Mulder, and Thomas 2016) show that, on average, parents move shorter distances following a divorce than individuals without children. Studies from Sweden (Stjernström and Strömgren 2012) and Norway (Dommermuth 2018) have found that parental income is negatively associated with the distance between children and nonresident parents, suggesting that being able to live close to one's child is restricted by the ability to find affordable housing. Increasing family complexity may also affect a parent's will or ability to remain close to a child from a previous union. This is suggested by findings from Sweden, Norway (Dommermuth 2018; Stjernström and Strömgren 2012), and the United Kingdom (Thomas, Mulder, and Cooke 2017), indicating that having a new partner or new children after a separation is positively associated with distance to the child from the previous relationship.

Previous research from Sweden has shown that the distance between children and nonresident parents has decreased in Sweden since the 1990s, which has been interpreted as a result of the increased prevalence of shared physical custody (Stjernström and Strömgren 2012). Both during this period and in the years leading up to it, a number of policy reforms have been implemented in this field, often in order to encourage paternal

involvement with children following a union dissolution. To date, however, no studies have examined the impact of such policy changes on the distance between children and nonresident parents, either in Sweden or internationally.

2.2 The Swedish case

Sweden is often considered a forerunner in family demographic behaviors such as cohabitation, divorce, childbearing across different partnerships, and family reconstitution (Ohlsson-Wijk, Turunen, and Andersson 2017). The level of Swedish fathers' involvement with their children is comparatively high and has increased over recent decades; for instance, as a result of the introduction of shared parental leave in 1974 (Duvander and Ferrarini 2013). In 1915 Sweden was one of the first countries in the world to introduce no-fault divorce legislation. In 1974 unilateral no-fault divorce was introduced, making divorce possible without the agreement of both spouses (Sandström 2012). Since then, the proportion of 15-year-olds who have experienced a parental union disruption has increased, from 22% in 1974 to between 30% and 35% from 1999 onwards (Thomson and Eriksson 2013).

Sweden is characterized by a widespread acceptance of different family forms (Trost 1996) and has a relatively high proportion of children who live with their fathers following a separation (30% of all lone parents are fathers, compared with 12% in the United Kingdom and 3% in Estonia) (Chzhen and Bradshaw 2012) or in a stepfamily setting, but a low proportion of children born to single mothers (Andersson, Thomson, and Duntava 2017).

Swedish divorce legislation distinguishes between legal custody (i.e., whether the parents share the legal responsibility for their children, or whether only one of the parents has the right to make decisions relating to the child) and physical custody (i.e., where the children live). Parents can decide freely whether the child should live fifty-fifty at each parent's, spend the majority of the time at the home of one of the parents and every other weekend with the other, or any other solution they see fit. However, a child can only have one registered place of residence, even if s/he shares her/his time equally between both parents. This makes it impossible to trace residential custody arrangements in Swedish population registers.

Comparative analyses from the 2010 Health Behaviour in School-aged Children study (HBSC) show that of the 38 countries studied, Sweden has the highest proportion of children of divorcees who live in shared physical custody arrangements. Twenty-one percent of all Swedish children aged 11, 13, or 15 who had divorced parents shared their time equally between both parents, as compared with (for example) 5% of the corresponding children in the United States (Steinbach, Augustijn, and Corkadi 2019).

Survey statistics from Statistics Sweden (2020) show that in 2019, 27% of all children aged 0–18 who did not coreside with both biological parents in the same household lived in an equally divided alternating residence arrangement.

Even when they do not share equal residence, children in Sweden have frequent contact with the other parent, with about 85% visiting the nonresident parent at least once a month (Statistics Sweden 2011).

2.3 Five custody reforms

The vast majority of Swedish post-separation custody arrangements are agreed upon by parents without the involvement of social services or the legal system (Statistics Sweden 2014). Voluntary agreements are also very common in cases in which custody is initially contested. In 2015, 4,166 custody disputes between parents were registered in the Swedish courts; in approximately 65% of these cases the parents reached a voluntary agreement without the court having to make a judgement (The Swedish Ministry of Health and Social Affairs 2017). Since the 1970s, policymakers have designed Swedish child custody laws with the intention of making family life more gender-equal, along with other family policies such as individual taxation of married couples and gender-neutral parental leave legislation (Schiratzki 2007). Even though no law explicitly governs shared custody, the laws are aimed at enforcing the caring obligations of fathers, both within unions and following union dissolution (Bergman and Hobson 2002). The legislators' intention has also been to promote voluntary parental agreements on custody and contact issues (Heimer and Palme 2016). None of the reforms described below explicitly regulate the geographical distance between parents and children; rather they are designed to increase the involvement of fathers. However, it is likely that policy-induced increased post-separation engagement leads to a decrease in geographical distances following separation. In particular, these kinds of policies should increase the share of very short distances between parental households, as shorter commutes facilitate active parenting.

In this paper we analyze whether five changes in custody legislation since the 1970s have affected the distance between parents and their nonresident children in the year after a separation.

1. The first policy change was introduced in 1977. For both previously cohabiting and married parents, joint legal custody after union dissolution could be granted by a court if it was in the best interest of the child and if both parents agreed to it. Prior to this, shared legal custody had only been available to parents who had previously been married. This reform is likely to have decreased distances between parental

homes and increased the share of nonresident parents living within very short distances, since a new group of parents has been given increased rights to participate in the life of their children following separation.

2. The second policy change in 1982 removed the need for a court decision so that parents who agreed to share legal custody of their children could arrange this themselves. This reform removed a formal obstacle to shared custody and is thus likely to have further decreased the distance between parents and children and increased the share of nonresident parents living within very short distances.
3. In 1992 a legal presumption for joint legal custody was introduced, making it the default option following parental divorce or separation unless the parents decided otherwise or, in cases involving a custody dispute, a court granted sole custody to one of the parents.
4. In 1998 the courts were allowed to grant joint legal as well as physical custody, even in cases in which one of the parents had demanded sole custody. Unlike the first two changes, reforms 3 and 4 did not remove legal obstacles. Instead they made it more difficult to obtain sole custody, which had previously been the default option. Given that these two reforms directly affected families who separated or divorced after their introduction, and given the normalizing effect of a legal presumption, these reforms are likely to have the strongest effect on decreased distances and an increased share of nonresident parents living very close to their children.
5. The fifth policy change, in 2006, modified policies 3 and 4 somewhat by making the parents' ability to co-operate a prerequisite for shared custody and took into account the risk of the child being abused. Since this reform set up a new prerequisite for shared custody, on average it is likely to have decreased paternal involvement, thus increasing the distance to the child.

2.4 Expected policy effects on parent–child distances

The paths between the introduction of a policy and subsequent changes in behavior can be understood on the basis of the behavioral assumptions underlying the policy. Schneider and Ingram (1990) suggest five underlying behavioral assumptions linked to public policies and their efficiency. First, policies may impact behavior directly via authoritative measures, such as prohibiting a previously allowed behavior or allowing behavior that was not previously permitted. Second, policies may affect behavior by providing new incentives for a certain behavior. This effect is likely to be rather direct, although possibly not as direct as the policy effect of adding or removing legal obstacles. Third, policies may provide capacity for individuals to make decisions, such as information, resources, or training. Fourth, the effectiveness of policies relies on people's

beliefs and values. Individuals are likely to act in line with policy goals if these are promoted as important, high priority issues, and if they are consistent with individuals' values and associated with positive symbols and labels. Fifth, policymakers sometimes use policies based on learning as a way of acting when a problem is recognized but where there is no consensus about the best course of action. These kinds of policies are often rather open-ended with regard to their purposes and objectives and allow lower-level agents to specify the choice of exact policy tools (Schneider and Ingram 1990).

On the basis of this framework, the introduction of a policy is likely to influence people's behavior if it changes what is legally permitted, if it provides people with new incentives for a certain behavior, if it provides people with new information or resources, or if it is in accordance with, or changes, people's norms.

In contrast to viewing policies as causing a behavioral change, a policy can be introduced as a response to an already ongoing development where behaviors have already begun to change or even become the norm, thus legally legitimizing them. In this case, the policy is not the precursor of change but the consequence of other societal processes.

The literature concerning policy effects on family behaviors such as divorce or childbearing is considerable. For example, research from Sweden has shown policy effects from the introduction of unilateral no-fault divorce in 1974 (Sandström 2012) and from policies promoting fathers' use of parental leave (Duvander and Johansson 2012). In the 1960s, working families with children received extensive financial and in-kind support to promote female labor force participation, which both increased the proportion of women in the labor force and increased fertility (Björklund 2006). Family policies promoting female labor force participation have also been shown to affect norms and attitudes regarding gender equality in general (Sjöberg 2004).

Studies focusing on policy effects on post-separation parental engagement are rather scarce. Fransson and colleagues (2018) attribute the high prevalence of shared physical custody arrangements in Sweden to gender-equal family policies, but do not test this empirically. In 1995, a Belgian reform gave mothers and fathers equal responsibility for children after a divorce. However, the policy did not affect the predominant pattern of sole maternal custody (Vanassche et al. 2017). This prompted a second reform in 2006, which required that in all divorce cases in which parents could not agree on the children's living arrangements, the judge had to first consider equally divided alternating residence (Sodermans, Matthijs, and Swicegood 2013). The likelihood of opting for a shared physical custody arrangement increased following this policy reform (Sodermans, Matthijs, and Swicegood 2013). In Sweden, an Official Report of the Swedish Government (The Swedish Ministry of Health and Social Affairs 2017) concluded that the Swedish custody reform of 2006 (described above) had probably contributed to an increase in custody disputes by explicitly highlighting the possibility of not having shared

custody, which parents had viewed as a legal presumption prior to the legislative reform. An evaluation of revisions made to the child custody statutes of Arizona in 2013, which directed courts to maximize children's parenting time with both parents (when consistent with children's best interests), found that the reform had produced an increase in equal parenting time and shared parenting (Fabricius et al. 2018).

Connecting back to Schneider and Ingram's (1990) framework, the policy reforms in Sweden are likely to affect the distance between children and their nonresident parents. Our analytical strategy is unable to distinguish the exact mechanisms through which a potential period- or policy-effect is operating. We argue that it is likely that the legal, incentivizing, and norm-affecting mechanisms are at play in terms of policy effects on residential decisions. The first two reforms removed formal obstacles to shared legal custody, whereas the third policy change introducing a legal presumption of shared custody could be viewed more as an incentivizing policy change, not affecting legal possibilities but incentivizing and normalizing shared custody. The fourth policy reform that enabled judges to go against parents' wishes when deciding on custody, and the fifth where this power was limited in cases where parents are unable to cooperate, could also be viewed as authoritative policy tools. All of the reforms could also be assumed to affect norms regarding custody.

Accordingly, we formulated the following hypotheses on the trend in distances between children and their nonresident parent:

- H1a: The policies implemented in 1977, 1982, 1992, and 1998 were followed by a decrease in distances between children and their nonresident parent measured one year after the family dissolution.*
- H1b: A particularly strong effect is an increase in the share of nonresident parents living within short distances*
- H2: The policy implemented in 2006 was followed by unchanged or increased distances between children and their nonresident parent.*

2.5 Developments in attitudes and family behaviors

An alternative reason for expecting a decrease in the geographical distance between children and the nonresident parent is related to the gradual egalitarianization of parenthood, which is likely to be reflected in post-separation parenting arrangements. Being actively involved in childrearing and in children's everyday lives has traditionally been part of the division of labor between men and women in Sweden as well as other countries, with the main responsibility falling on the mother. However, traditional norms regarding gender roles, including the care of children, were increasingly contested during the latter

half of the 20th century. Goldscheider, Bernhardt, and Lappegård (2015) have even referred to Swedish fathers' increasing involvement in childrearing as the second step in an ongoing gender revolution: the first step involved women's entry into the labor market and the second step involved men becoming full actors in matters related to family life. Fathers assuming equal parenting duties is also likely to have consequences for post-separation arrangements. That paternal engagement both before and after a separation has a positive effect has been shown in findings from the United Kingdom (Haux and Platt 2021) and in the case of a correlation between pre-divorce engagement and shared physical custody from Quebec (Pelletier 2017).

Gender role attitudes have been shown to change over time, largely by means of cohort replacement (Brewster and Padavic 2000; Brooks and Bolzendahl 2004) as generations with more traditional gender role attitudes die and are replaced by younger generations with more liberal attitudes. Another explanation for changing gender role attitudes is changes in the social structural relationships in which individuals are situated (Brooks and Bolzendahl 2004). One such relationship is women's increased labor force participation, which in Sweden has increased since the postwar period and is now at a stable high. This has changed women's economic opportunities, reduced gender inequality, and influenced norms regarding the roles of women and men in society, which is likely to also impact post-separation arrangements.

However, developments in behaviors such as increased paternal engagement may not be shared equally by all sectors of society. Certain groups may be more likely to adopt new ideas and attitudes than others. Behavioral changes may be caused by policy changes and some groups may respond quickly to a new policy, whereas the behaviors of others may be changed by a longer process of norm diffusion or not at all. For example, regarding fathers' use of parental leave in Sweden, research by Ma and colleagues (2019) has shown that taking extended periods of parental leave has become increasingly common among all groups of fathers since the 1990s, but that the increase has been significantly slower among fathers with low educational attainment and among those with an immigrant background. Settersten and Cancel-Tirado (2010) have discussed how fatherhood in America has become more diverse but also more socially polarized, with men of low socioeconomic status having not only a higher risk of union dissolution but also a less active parenting role afterwards. In a comparison of 17 countries, Härkönen and Dronkers (2006) show that the correlation between union dissolution and educational attainment has become increasingly negative over time as divorce has become more common. This suggests that union dissolution requires more resources when it means breaking social norms but that these resources become less important as divorce becomes a common practice.

To date, no studies have examined differentials in policy effects on parent-child distance, post-divorce engagement, or shared physical custody in Sweden. However,

Stjernström and Strömberg (2012) find a shift from a positive to a negative correlation between the educational attainment of fathers and their distance to a nonresident child between the years 1990 and 2005. Dommermuth (2018) finds a negative correlation between education and distance for Norway. Cross-sectional studies from both Sweden (Fransson, Bergström, and Hjern 2015; Turunen 2017) and Norway (Kitterød and Lyngstad 2012) show a positive correlation between economic resources and the likelihood of sharing physical custody for children following a union dissolution. However, these studies do not assess changes over time. However, Garriga, Turunen, and Bernardi (2021) do show that whereas there was an increase in shared physical custody across socioeconomic strata in Spain between 2006 and 2014, similar patterns cannot be found for Sweden, where the increase was mainly in the higher strata. In the case of Belgium, prior to the custody reform of 2006 shared physical custody was more common among divorced parents of higher socioeconomic status. Following the reform, the phenomenon gradually became more common in the overall population (Sodermans, Matthijs, and Swicegood 2013). The same study also shows that low-conflict couples were overrepresented among families with shared physical custody prior to the policy reform but this pattern disappeared following the introduction of the legal presumption, further indicating that the phenomenon has become less selective (Sodermans, Matthijs, and Swicegood 2013).

Building on the way in which norms favoring shared parenting have developed in Sweden over recent decades, and how this may impact parents from different socioeconomic strata (SES) differently, we pose alternate hypotheses:

- H3a: The distances between children and their nonresident parents have gradually decreased during the last 40 years.*
- H3b: This development has been particularly pronounced among high-SES parents.*

3. Data and analysis

3.1 Data

Our analyses build on Swedish population register data that allow us to assess when two parents are no longer living at the same address, and the Euclidian distance in meters between the child and the nonresident parent. To our knowledge, this is the only data set that includes such exact measures of residence and covers the whole period between 1974 and 2011, when all the relevant custody policy changes were introduced.

The study population comprises all children under 18 whose parents separated in the year $t-1$. Union dissolution is defined as two previously coresident parents who are now registered as residing at two different locations. This has previously been validated as a high-quality measure of parental union dissolution (Thomson and Eriksson 2013). We link children to their parents using the Multigenerational register (Flergen), which also allows for measuring the number of siblings. In total, our data contain 1.2 million children, of whom 1 million are registered as living with their mother during the year following the separation, and 200,000 are registered as living with their father.

Our main dependent variable is the distance between a child and his or her nonresident parent in the year after union dissolution. It is important to note that even though a child can only be registered with one parent, s/he may still live with both parents. Thus the nonresident parent may in fact be a part-time resident parent. Geographical coordinates for the home addresses of the child and the nonresident parent allow us to calculate the Euclidean distance between the mid-point of the property in which the child lives and the mid-point of property in which the nonresident parent lives. In a first step we examine both continuous distance and the natural logarithm of distance, in order to account for skewness in our dependent variable. In a second step we examine the likelihood of living within walking distance of the nonresident parent, defined as living within two kilometers. This distance threshold is used by the City of Stockholm to determine whether a child is eligible to receive free public-school transport between home and school (City of Stockholm 2018); i.e., when a school is considered to be too far away to walk to. It is likely that the strongest impact of the introduction of the policies was on the likelihood of living at a short distance from one's children. Very long distances are likely to be less affected by the policy changes, as parents living far from their children are, on average, likely to be the least child-oriented and therefore less receptive to the policy changes. In order to examine whether this is the case, we examine the likelihood of children living more than 50 kilometers from their nonresident parent. This threshold was chosen because in a number of countries 50 kilometers is the distance at which migration propensities start to level off, indicating that this is what individuals consider to constitute a long distance (Vidal et al. 2017).

Our main independent variables are the calendar year and the parents' socioeconomic status. Socioeconomic status is operationalized as the inflation-adjusted income quintile of the nonresident parent. The quintiles were constructed for the full population of 20–64-year-old individuals over the studied period. Income is used as a proxy for socioeconomic status because the quality of the income data is high even during the earlier parts of the period examined, whereas the quality of educational data is rather poor for the early parts of the period.

In all models we control for a number of potential confounders. These are the age of the child at the time of separation, the number of siblings the child has, whether parents

were cohabiting or married, and the size of the municipality in which the family lived prior to separation.

3.2 Analytical strategy

We examine how the distance between children and nonresident parents in the year after a separation has changed over the last 40 years, addressing potential policy effects on this trend, as well as socioeconomic differences. All analyses were performed separately by the sex of the nonresident parent. It should be noted that all analyses were conducted for the year after the separation in order to avoid the possibility that policy effects were distorted by residential decisions taken long before the implementation of the policy changes in question.

First, we investigate whether changes in child custody policies during this period affected the distance between children and nonresident parents in the year after a separation. We examine this by considering each of the five years in which such policies were implemented as distinct critical junctures, at which we would expect a discrete jump or fall in the average distance between children and their nonresident parents. The empirical model is simple and can be formulated as follows:

$$Distance_i = \beta_0 + \beta_1 Year_{1975} + \dots + \beta_{37} Year_{2011} + \beta_{38} Controls_i + \varepsilon_i$$

where *Distance* is either a continuous variable measuring the Euclidian distance between the child and the nonresident parent the year after separation, the natural logarithm of this distance, a dichotomous variable measuring whether the distance between the child and the nonresident parent is less than 2 kilometers, or a dichotomous variable measuring whether the distance is 50 kilometers or more. *Year* is a set of dummy variables ranging from 1975 to 2011 (with 1974 specified as the reference category), measuring the year of separation, and *Controls* is a vector of control variables, as specified above, generally measured in the year that the parents separated. We hypothesize that distances will decrease by year due to gradual changes in gender- and childcare norms and to cohort replacement effects, as more child-oriented fathers replace less child-oriented or more traditional fathers. In addition, we expect particularly large decreases following the years in which the policies were implemented, 1977, 1982, 1992, and 1998, and possibly an increase in distances after 2006.

Second, we examine how the potential decrease in distance differs by the socioeconomic status of the parents, in order to gauge which groups are driving any observed change and to allow for the possibility that the groups are differentially affected by the policy reforms. We do this by means of separate analyses of the nonresident

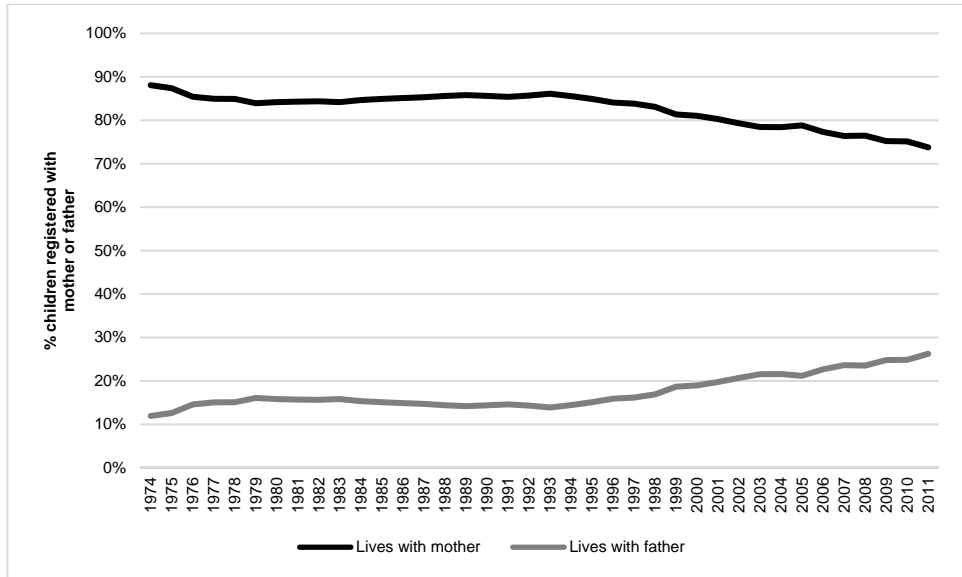
parents, based on inflation-adjusted income quintiles. Given the large size of our data set, we conduct analyses on sub-sets of data rather than including interaction terms. This is advantageous since it allows for the control variables to also have heterogeneous effects on distance.

4. Results

We present four sets of analyses: (1) OLS regressions on the distance between the child and the nonresident parent, (2) OLS regressions on the natural logarithm of the distance between the child and the nonresident parent, in order to adjust for skewness in the distance variable, (3) logistic regressions with the child and nonresident parent living within 2 kilometers of each other as the dependent variable, and (4) analyses similar to (3) but with living more than 50 kilometers from one another as the dependent variable. In a first step we examine average effects, while in a second step we examine differential effects depending on the income quintile of the nonresident parent. All analyses have been performed separately depending on whether the mother or the father is the nonresident parent.

Figure 1 shows that the proportion of children registered at their mother's place of residence decreased over the studied period. In 1974, 88% of the children were registered with their mothers, and in 2011 this proportion had decreased to 74%. It should again be noted that all analyses were conducted for the year after the separation in order to avoid the possibility that potential policy effects could be distorted by residential decisions taken long before the implementation of the policy changes in question. The distance between children and their nonresident parents tends to increase as the time since the separation of their parents increases. Supplementary analysis of our data (not presented) shows that on average, among children aged 0–5 whose parents divorced in the year 2000, the distance between the child and the nonresident parent increased from 2.5 to 6 kilometers during the first 5 years following the separation, and from 2.5 to 9 kilometers during the 10 years following the separation. We would also like to emphasize once again that children can only be registered with one parent, and that it is very likely that they also spend time with the parent with whom they are not registered.

Figure 1: Percentage of children registered as living with their mother and father respectively in the year after separation, 1974 to 2011



Figures 2 through 5 present developments in the distance between nonresident parents and their children in the year after separation, with calendar year of separation as the only independent variable. Estimates are also available in the Appendix, Table A-1. Figure A-1 in the Appendix includes a more detailed categorization of distances over time. We expected to find decreasing distances following the reforms of 1977, 1982, 1992, and 1998, whose aim was to increase nonresident fathers' involvement with their children, and possibly an increase in distances after 2006 when the ability of the courts to award shared physical custody was restricted under certain circumstances. The vertical grey bars represent the years in which a policy change was implemented.

Figure 2: OLS regressions on distance in km between child and nonresident parent the year after a separation, with year as the only independent variable. Predicted distance. 1974 to 2011

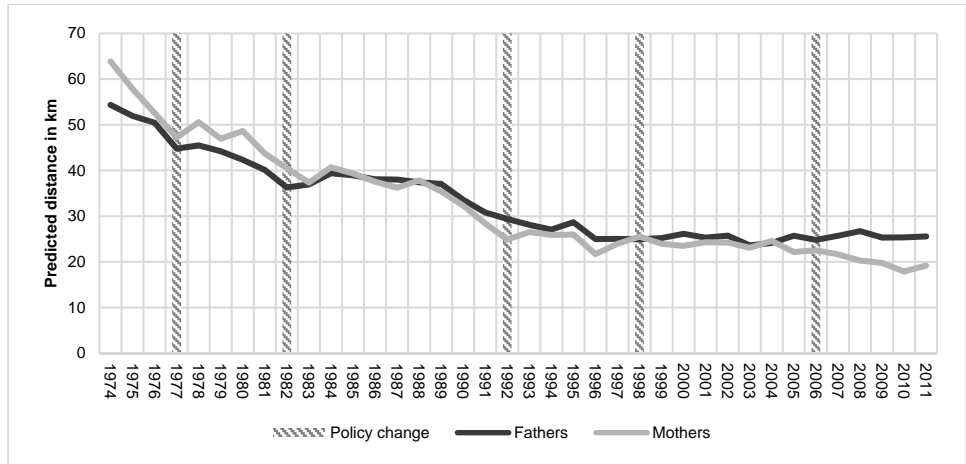


Figure 3: OLS regressions on ln (distance between child and nonresident parent) the year after a separation, with year as the only independent variable. Coefficients. 1974 to 2011

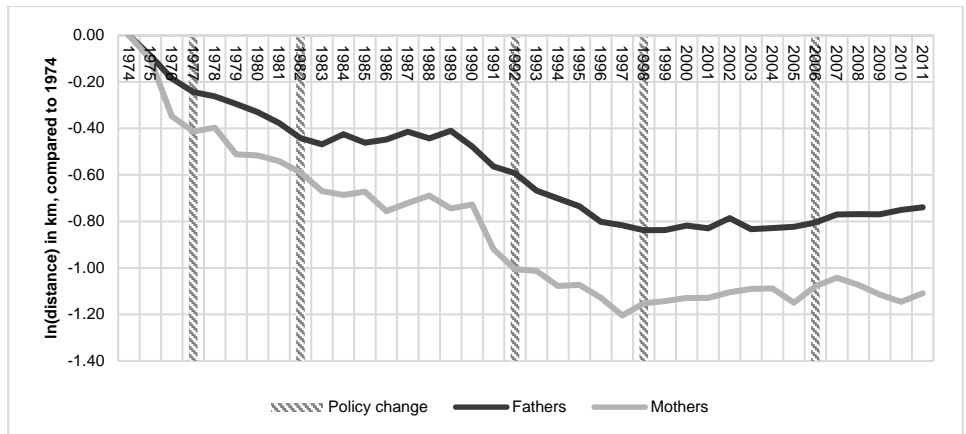


Figure 4: Logistic regressions on likelihood of child and nonresident parent living within 2 km of each other the year after a separation, with year as the only independent variable. Predicted probabilities. 1974 to 2011

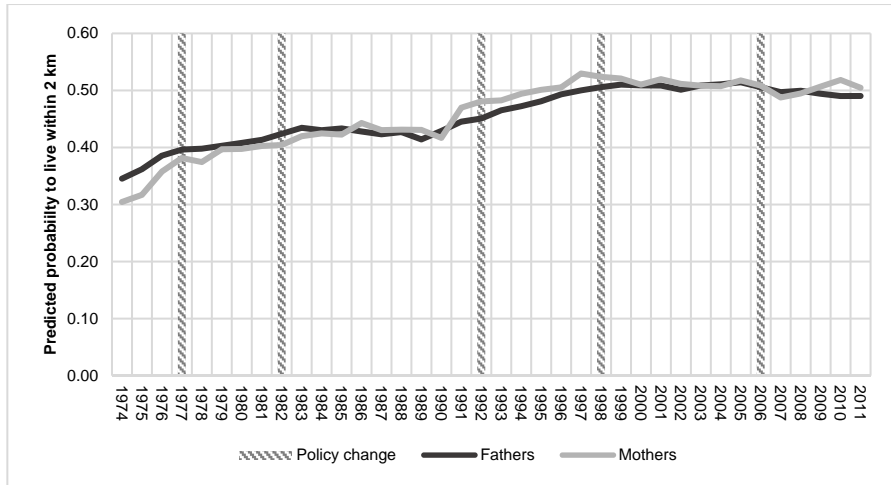


Figure 5: Logistic regressions on likelihood of child and nonresident parent living more than 50 km from each other the year after a separation, with year as the only independent variable. Predicted probabilities. 1974 to 2011

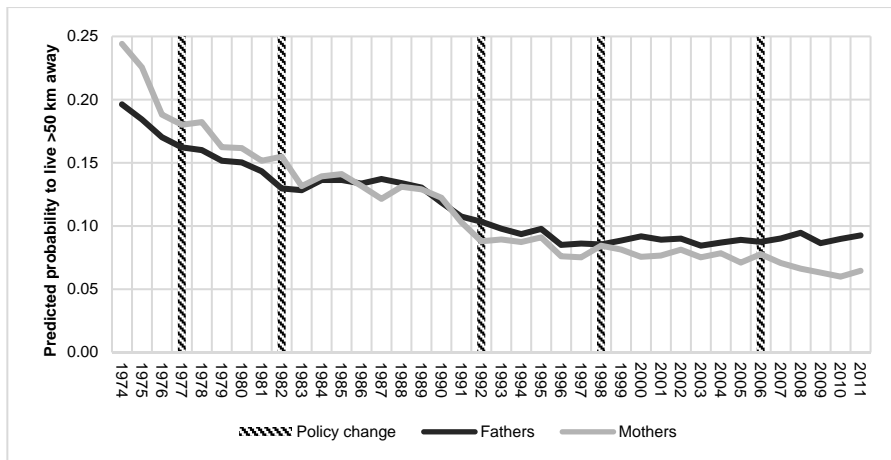


Figure 2 shows that the average distance between children and their nonresident parents in the year after family dissolution decreased substantially over the period examined. In 1974 the average distance the year after separation was 64 kilometers for nonresident mothers and 54 kilometers for nonresident fathers. In 2011 this had decreased to 19 kilometers for mothers and 25 kilometers for fathers. Most of the decrease took place during the period prior to the mid-1990s, after which the patterns stabilized. The estimates from Figure 3 support this pattern, showing that the results are not driven by skewness in the distance variable. The estimates presented in Figure 3 can be interpreted as the percentage decrease in distance, as compared to 1974. For mothers, the distance in 2011 is around 33% of the distance in 1974 ($100 \cdot \exp(-1.109)$), whereas for fathers the distance is 48% of the initial distance ($100 \cdot \exp(-0.739)$). The faster decrease in the average distance between a child and nonresident mother compared to a child and nonresident father may reflect the increase in shared physical custody. It is possible that children registered with their fathers at the beginning of the studied period had mothers who were not willing or able to have custody of the child, i.e., *de facto* father custody, and therefore lived farther away from the child. The over-time increase in paternal coregistration (see Figure 1) is instead likely to be due to an increase in shared physical custody where the child is registered with the father but actually lives part-time in both parental households. In such arrangements the mother is more likely to live at a shorter distance from the child. Similarly, children registered with their mothers will also to an increasing degree live in a shared arrangement, but to a lesser extent as maternal coregistration is still more common, producing a faster decline in the mother–child distance.

In Figure 4 we focus on the likelihood of living within walking distance of 2 kilometers. In 1974 only around one-third of all children lived this close to their nonresident parent, whereas in 2012 this was the case for 50% of all children. Further, we can see from Figure 5 that in 1974, 20%–25% of all nonresident parents lived more than 50 kilometers from their children, whereas in 2011 this proportion has been cut by more than half (from 24% to 6% for mothers; from 18% to 9% for fathers). In a similar way to the patterns described in Figures 2 and 3, the observed trend stagnated in the mid-1990s.

One of our main research questions concerns whether the implemented policies have had any impact on the geographical distance between children and their nonresident parent. By studying whether a slope changes following the implementation of a policy (vertical bars) we can estimate whether there are any direct policy effects. We do not find any such indications. The decreasing distance is rather gradual and is not clearly linked to the implementation of any of the policies. For the logarithmic distance, we see a rather steep decline in distance in 1989 for fathers and in 1990 for mothers. However, this cannot be linked to any policy changes. At the same time, it is important to highlight the fact that policies may have both direct and indirect effects. By examining critical

junctures, as we do here, we only capture direct effects, and we thus do not capture the long-term impact that policies can have on norms and behaviors. Thus, even though we find no evidence of policy effects, our estimates are most likely towards the lower bound of the true policy effects.

Table 1 includes descriptive statistics showing how the groups of children and their nonresident mothers and fathers have changed over the studied period. In the interests of readability, the table only includes the years 1974, 1984, 1994, 2004, and 2011. It demonstrates that among children with separated parents, it has become increasingly common for the parents to have been cohabiting rather than married prior to the union dissolution. It has also become increasingly common to have a nonresident parent in income quintile 4 or 5 (i.e., to have a wealthy nonresident parent), whereas it has become less common for the nonresident father to be in income quintile 2 or 3, and less common for the nonresident mother to be in income quintile 1–3. Differences between mothers and fathers should be interpreted with caution. There are relatively few cases of nonresident mothers during the early years of the study, and in addition, as described above, it is likely that nonresident mothers were a more selective group in the early part of the period than in the later part, when many children who are de-jure registered with their father, de-facto also live part of the time with their mother. In 2011 a larger proportion of the children with divorced parents lived in large municipalities (with at least 80,000 inhabitants) than was the case in the 1970s. Among children with nonresident mothers it has become increasingly common to be an only child, whereas we see no such trend among those with nonresident fathers. Children with a nonresident mother are on average older at the time of divorce than those with a nonresident father, but we find no trend in this regard over time.

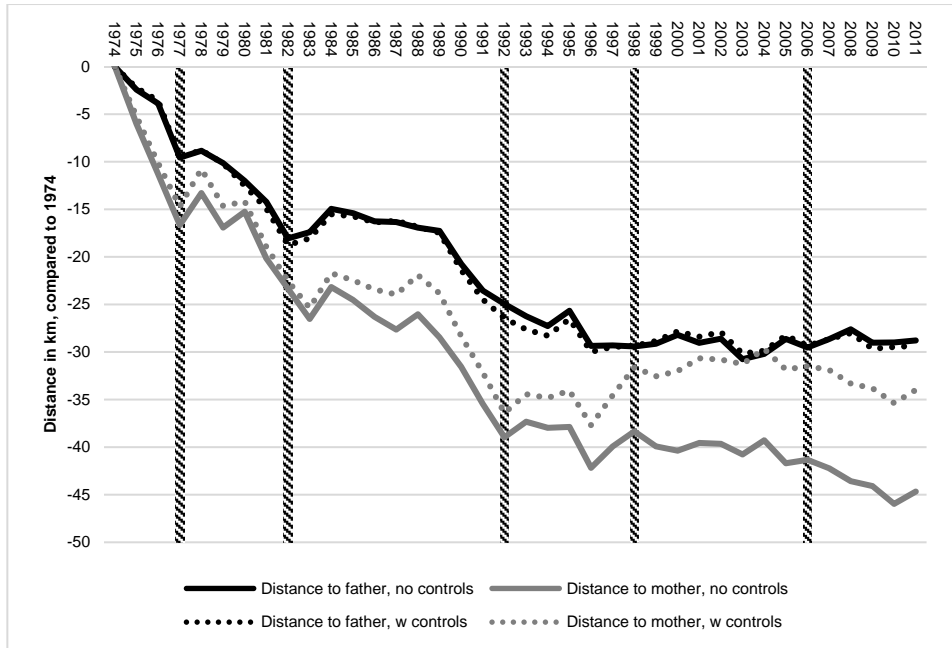
In order to understand whether the decreasing distances are due to changing behavior, stemming, for instance, from normative changes, or due to changes in the composition of the group of nonresident mothers and fathers, as described in Table 1, we introduce variables controlling for whether parents were cohabiting or married, the income quintile of the nonresident parent, the population size of the municipality in which the family lived prior to separation, the number of siblings the child had, and the age of the child at the time of separation. These results are presented in Figure 6 for the trend in the average distance between the child and the nonresident parent in the year after the separation. For fathers, the decrease in distance is not due to compositional changes in the pool of nonresident fathers. For mothers, however, a rather large proportion of the decrease since the 1990s stems from compositional differences over time in the pool of nonresident mothers. In 1974 this group of women was rather heterogeneous in terms of its income levels, whereas in 2011, 60% of the women were in the top income quintile. Among nonresident mothers, high earners tend to live very close to their children (as will

be shown in Figures 10 and 11), which is most likely why the estimates change so much for this particular group.

Table 1: Descriptive statistics for the year after separation

		Father is nonresident					Mother is nonresident				
		1974	1984	1994	2004	2011	1974	1984	1994	2004	2011
Marital status	Married	81%	67%	63%	57%	54%	94%	82%	76%	64%	59%
	Cohabiting	19%	33%	37%	43%	46%	6%	18%	24%	36%	41%
Income quintile of nonresident parent	Q1	18%	20%	23%	17%	20%	25%	17%	14%	10%	11%
	Q2	27%	35%	28%	13%	10%	27%	32%	24%	9%	6%
	Q3	26%	23%	22%	14%	9%	27%	29%	30%	11%	7%
	Q4	17%	12%	16%	26%	24%	15%	16%	21%	23%	15%
	Q5	12%	9%	11%	30%	38%	6%	5%	11%	47%	60%
Size of municipality	<20 000	18%	22%	22%	21%	19%	24%	28%	26%	22%	22%
	20,000–39,999	21%	21%	24%	23%	19%	22%	23%	25%	24%	20%
	40,000–79,999	25%	25%	22%	20%	20%	24%	24%	23%	22%	22%
	80,000+	16%	16%	17%	20%	25%	15%	15%	16%	18%	22%
	Stockholm, Gothenburg, Malmö	19%	16%	15%	17%	17%	15%	10%	10%	15%	13%
Number of siblings	0	22%	24%	19%	19%	22%	14%	16%	13%	15%	19%
	1	32%	36%	34%	35%	34%	33%	41%	37%	41%	44%
	2	23%	22%	24%	24%	22%	27%	26%	28%	25%	22%
	3	12%	10%	12%	12%	11%	14%	10%	13%	12%	9%
	4+	11%	8%	10%	11%	10%	12%	6%	9%	8%	6%
Mean age of child at parental separation	8	8	7	9	8	10	11	10	10	9	
N	20,145	23,101	31,891	27,814	25,011	2,730	4,185	5,381	7,657	8,897	

Figure 6: Change in period estimates from OLS regression following addition of control variables the year after a separation. Vertical bars represent years of policy change. 1974 to 2011



5. Differences by socioeconomic status of nonresident parent

Next, we examine socioeconomic differences in terms of living in closer proximity to the nonresident child, and whether differences are more pronounced for any particular socioeconomic groups. We do this by means of conducting separate regressions for inflation-adjusted income quintiles, as presented in Figures 7 to 12. All models include the controls introduced in Figure 5. In the interests of readability, we only present estimates for Q1 (the lowest earners), Q3 (the mid-earners), and Q5 (the highest earners). See Appendix, Table A-2 for all estimates however.

We start by presenting the results for nonresident fathers, for predicted distances (Figure 7), the predicted probability of living within 2 kilometers (Figure 8), and the predicted probability of living more than 50 kilometers apart (Figure 9). The predictions were conducted for hypothetical father–child sets in which we allow the year of

separation to vary, while we set the child's age to 3 at the time of the separation, marital status to cohabiting, the child as having 1 sibling, and the family as having lived in Stockholm, Gothenburg, or Malmö in the year prior to separation.

Figure 7: OLS regressions on distance in km between child and nonresident fathers the year after a separation. Predicted distance. 1974 to 2011. Separate analyses by income quintile, including full set of control variables

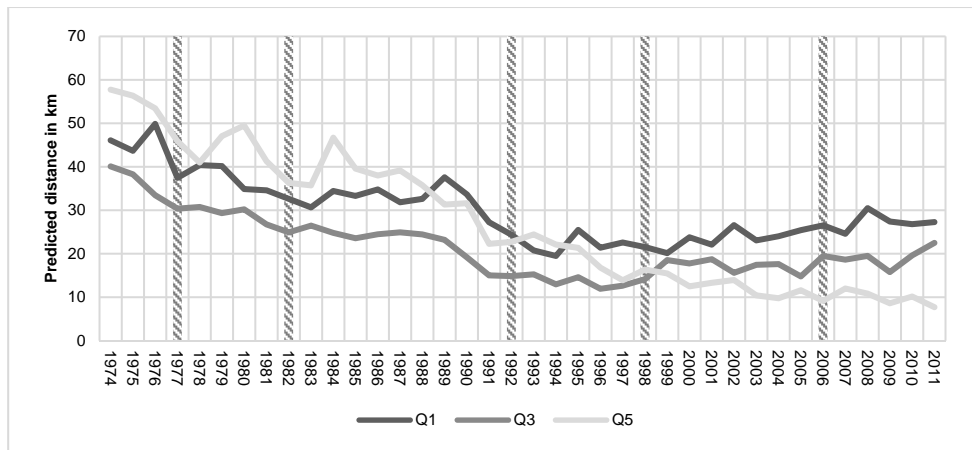
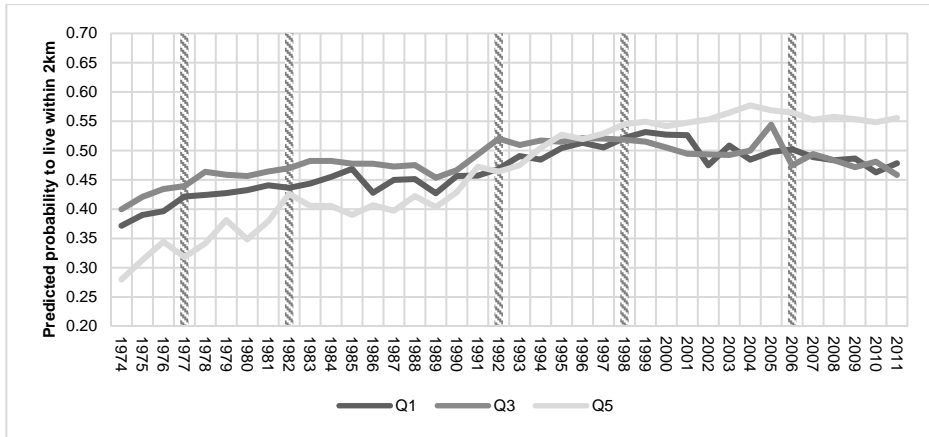


Figure 7 clearly demonstrates that the group showing the largest shift in proximity to their nonresident children is the high-income fathers. From having had the largest father-child distances in 1974, of almost 60 kilometers, in 2011 they have the shortest mean distance, of only 7 kilometers. It is unclear whether this trend has come to a halt for the highest income quintile, as it still appears to be decreasing even at these short distances. The results are mirrored in the probability of a father-child distance of less than 2 kilometers (Figure 8), which has doubled for the highest income quintile, from a .27 probability to a .55 probability. We can see from Figure 9 that the probability that a father from the highest income quintile is living more than 50 kilometers from his child reduced from 14% in 1974 to 3% in 2011. The father-child distances of the middle- and lowest-income quintiles also decreased from the 1970s, although this trend plateaued in the early 1990s. There is even a slight tendency towards increased distances after the late 1990s. For this group, the probability of living within 2 kilometers of the child (Figure 8) remains rather stable at around .5, although there is a tendency towards increased distances here too, which also manifests itself in a slightly increased probability of living more than 50 kilometers apart since the mid-1990s.

Figure 8: Logistic regressions on likelihood of child and nonresident father living within 2 km of each other the year after a separation. Predicted probabilities. 1974 to 2011. Separate analyses by income quintile, including full set of control variables



Note: Y-axis is broken

Figure 9: Logistic regressions on likelihood of child and nonresident father living more than 50 km from each other the year after a separation. Predicted probabilities. 1974 to 2011. Separate analyses by income quintile, including full set of control variables

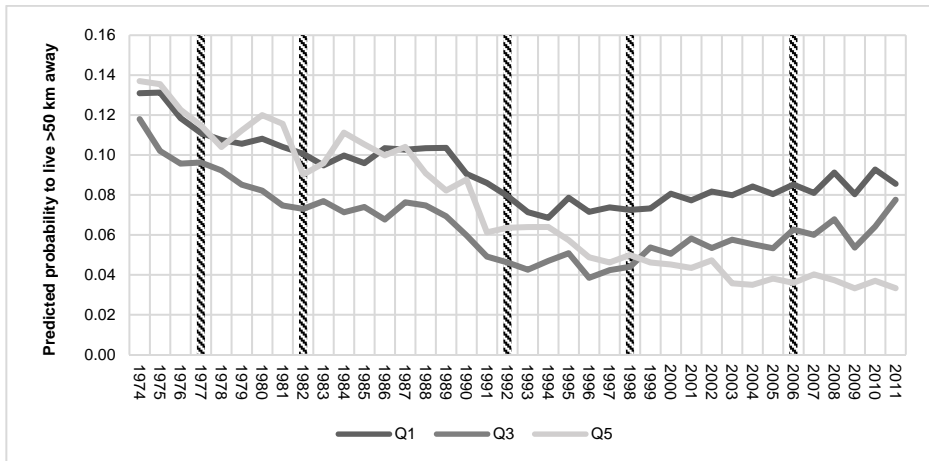


Figure 10: OLS regressions on distance in km between child and nonresident mothers the year after a separation. Predicted distance. 1974 to 2011. Separate analyses by income quintile, including full set of control variables

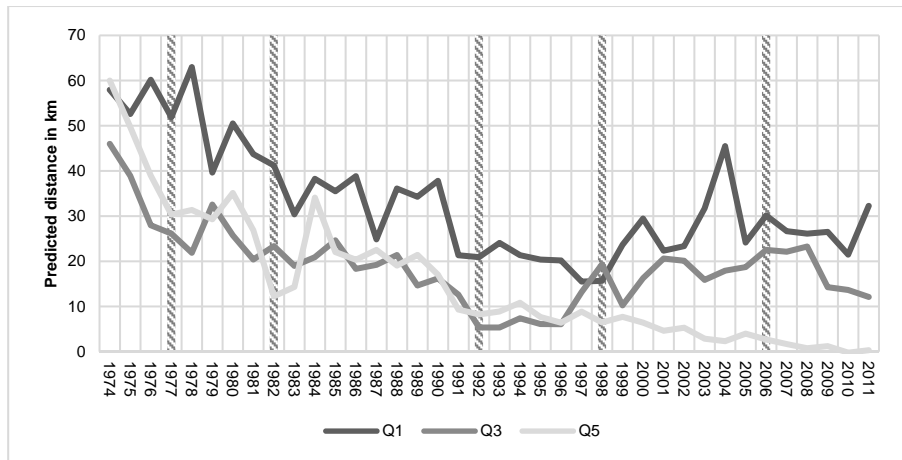
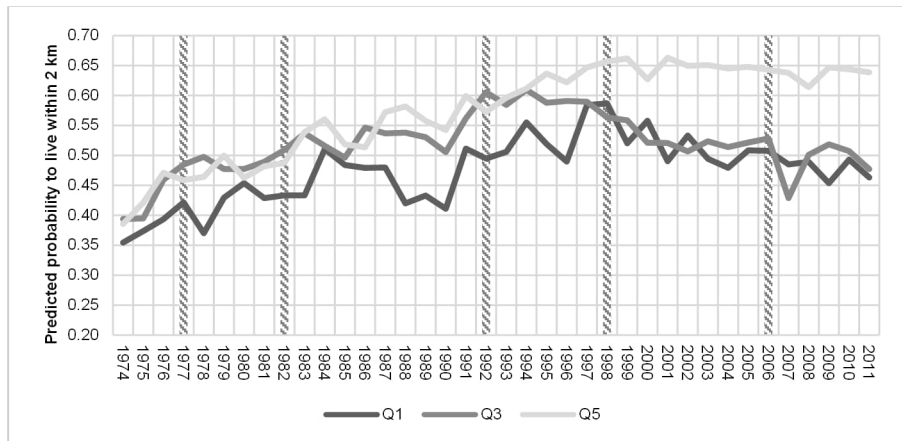
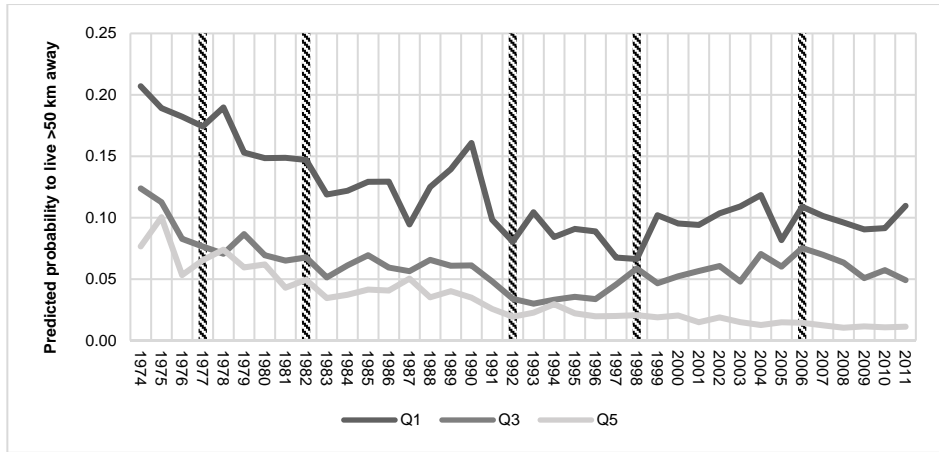


Figure 11: Logistic regressions on likelihood of child and nonresident mother living within 2 km of each other the year after a separation. Predicted probabilities. 1974 to 2011. Separate analyses by income quintile, including full set of control variables



Note: Y-axis is broken

Figure 12: Logistic regressions on likelihood of child and nonresident mother living more than 50 km from each other the year after a separation Predicted probabilities. 1974 to 2011. Separate analyses by income quintile, including full set of control variables



The results for mothers in Figures 10–12 are similar to those for fathers. The estimates fluctuate substantially. The decrease in mother–child distance is again greatest among those in the highest income quintile, and the predicted distance is as low as zero kilometers for those who separated in 2011 (Figure 10). As was the case with the patterns found for men, distances started to increase once more for the lower income quintiles, whereas they continue to decrease for the highest income quintile. For low- and mid-income mothers, the probability of living within 2 kilometers of the nonresident child is similar to that for fathers (Figure 11). For high-income mothers, however, the likelihood is substantially greater – around .65 for mothers as compared to .55 for fathers, and mothers are also less likely than fathers to live over 50 kilometers from their nonresident children (only 1%, see Figure 12).

As regards policy effects, the only shift that emerges at the time of a policy implementation is a clear increase in 1998 in mother–child distances for the lowest income quintile (Figure 10), an increase in the likelihood of living more than 50 kilometers apart in that same year (Figure 12), and a corresponding decrease in this quintile’s probability of living within 2 kilometers of their children (Figure 11). With this exception, and in contradiction to our hypotheses, we find no indications of parents adapting to new custody policies by changing how far they move in relation to their nonresident children after a separation.

In order to ensure that the decreasing distances do not originate in a reduction in overall mobility in the population, we have examined the trends for the overall internal migration patterns for all individuals of childbearing ages (ages 30 to 49). The proportion of individuals of childbearing age who make short- or long-distance moves (moves across municipality or county borders, respectively) remained stable over the period examined, with the exception of a slight decrease in mobility at the beginning of the period. This indicates that the overall pattern observed in this study reflects an increase in nonresident parents' levels of involvement rather than changing migration patterns in the overall population (see Appendix, Figure A-2).

6. Discussion and concluding remarks

The geographical distance between children and their nonresident parents following a divorce is an important predictor of the children's contacts with their nonresident parent, and of the economic and emotional support they receive from this parent (Cooksey and Craig 1998; Manning and Smock 2000; Smyth, Sheehan, and Fehlberg 2001). In this study we have analyzed how the distance between children and nonresident parents in the year after the separation developed in Sweden between 1974 and 2011, with a particular focus on how this is related to changes in the form of five potentially important child custody policy reforms, and to differences across socioeconomic groups.

Our results show clearly decreasing distances since the 1970s, which then stabilized from the mid-1990s. The small changes noted since the mid-1990s contradict results presented by Stjernström and Strömgren (2012), who also found a rather pronounced decrease in migration distances after 1990. We have attempted to replicate their results in order to understand these contradictory findings (not presented), and found them to be due to Stjernström and Strömgren pooling all children with nonresident parents, whereas we only study the first year after the separation. Our results indicate that the decrease observed by Stjernström and Strömgren (2012) after the 1990s, or rather the underlying behavioral change that produced this decrease, took place long before the 1990s, with the decrease being due to parents having separated in earlier years, a behavior which had in fact already stabilized by the 1990s.

Our findings show a marked increase in the share of parents who live close to each other after a union dissolution, i.e., within 2 kilometers, which likely reflects the increase in shared physical custody, as this kind of residential arrangement requires geographical proximity (Bakker and Mulder 2012).

Our study does not show any evidence of immediate policy effects. The policies could, however, still have normative implications that are not captured by our model. The only indication of distances changing following the introduction of a policy change was

in the opposite direction to the one we expected, and showed an increasing distance after 1998 when courts were given the ability to prescribe shared legal as well as physical custody against the will of one of the parents.

Rather than providing evidence of distinct behavioral changes following the introduction of custody policies, our results indicate a diffusion process involving a gradual decrease in distances between children and nonresident parents after a union dissolution until the 1990s. This largely mirrors the development of female labor force participation in Sweden, which increased during the postwar period, peaked in 1990, decreased during the country's economic crisis, and then stabilized in the early 2000s (Statistics Sweden 2018). These joint developments can be understood on the basis of the structural relationship explanation of changing gender norms (Brooks and Bolzendahl 2004), which highlights the importance of social structures in which people are situated, such as female labor force participation, as a basis for understanding changing gender attitudes.

Although there are both empirical and theoretical reasons for assuming that geographical proximity promotes more active and engaged parenting, it is not possible to exclude the possibility of reverse causality. More engaged and child-oriented parents are likely to remain active parents after a union dissolution (Haux and Platt 2021), move a shorter distance from the child (Cooksey and Craig 1998), and opt for shared physical custody (Pelletier 2017). Given that we find an increase in wealthy nonresident parents, it is also possible that the policies as such were introduced in response to increased coparenting within this resourceful group, rather than affecting this group's parenting behavior.

A possible limitation of analyzing population register data is the risk of misreporting. If there are incentives to register children with a parent other than the one with whom they actually live, and if these incentives have changed over time, it could potentially bias our results. We believe the risk of this to be negligible. Rather, existing policies provide incentives to register children where they actually live, since it provides the basis of housing allowance and social welfare. To the best of our knowledge, no policy reforms affected the way single parents got access to these support systems during the studied period. Also, note that universal child support is not linked to place of residence.

The different distance trends noted for low earners and high earners respectively are important for two reasons. First, they raise the question of which group has been the primary driver of the increase in post-separation paternal engagement. Is it the low-income fathers who already lived closer to their nonresident children in the 1970s, or is it the high-income fathers who lived at a considerable distance from their children in the 1970s but have substantially changed their behavior since then? At the beginning of the studied period, children from lower classes had geographical access to their nonresident

parents to a greater extent than children from more affluent families, whereas today this has changed. Second, these results highlight the importance of affordable housing. In 2011, only 1% of the wealthiest mothers lived more than 50 kilometers from their nonresident children, as compared to 10% of mothers with the lowest incomes. This suggests that income serves to restrict the choice of where to live, for mothers and fathers alike. As such, the different distance trends for high- and low-earning fathers respectively could also be interpreted as reflecting a process whereby although it is likely that both high- and low-earning fathers have a desire to live closer to their nonresident children, high earners have greater opportunities to adapt their residential situation to the changing norms regarding parenting roles, and to choose residential arrangements that can accommodate these changing norms.

7. Acknowledgements

The authors are grateful to Elizabeth Thomson for reading earlier drafts of this article and for providing useful comments. The research leading to these results received funding from Forte: The Swedish Research Council for Health, Working Life and Welfare (Grant 2016–00511), the Swedish Research Council (Grants 2013-07681, 2019-00245, 2020-02488), the Linnaeus Center for Social Policy and Family Dynamics in Europe (funded by the Swedish Research Council Grants 349-2007-8701), and Statistics Sweden.

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Appendix

Table A-1: Estimates from OLS and logistic regressions. Also presented in Figures 2 to 5

	OLS on distance in km				OLS on ln(distance)				Logistic regression on living within 2 km			
	to father		to mother		to father		to mother		from father		from mother	
	beta	se	beta	se	beta	se	beta	se	log odds	se	log odds	se
Constant	54	0.7	64	1.8	8.96	0.01	9.24	0.04	-0.64	0.01	-0.83	0.04
1975	-2	0.9	-6	2.4	-0.09	0.02	-0.10	0.05	0.07	0.02	0.06	0.06
1976	-4	0.9	-11	2.3	-0.19	0.02	-0.35	0.05	0.17	0.02	0.24	0.05
1977	-10	0.9	-17	2.3	-0.24	0.02	-0.41	0.05	0.22	0.02	0.34	0.05
1978	-9	0.9	-13	2.3	-0.26	0.02	-0.40	0.05	0.22	0.02	0.31	0.05
1979	-10	0.9	-17	2.3	-0.30	0.02	-0.51	0.05	0.25	0.02	0.41	0.05
1980	-12	0.9	-15	2.3	-0.33	0.02	-0.52	0.05	0.27	0.02	0.41	0.05
1981	-14	0.9	-20	2.3	-0.38	0.02	-0.54	0.05	0.29	0.02	0.43	0.05
1982	-18	0.9	-23	2.2	-0.44	0.02	-0.59	0.05	0.33	0.02	0.44	0.05
1983	-17	0.9	-27	2.2	-0.47	0.02	-0.67	0.05	0.38	0.02	0.50	0.05
1984	-15	0.9	-23	2.3	-0.43	0.02	-0.69	0.05	0.36	0.02	0.52	0.05
1985	-15	0.9	-25	2.3	-0.46	0.02	-0.67	0.05	0.37	0.02	0.51	0.05
1986	-16	0.9	-26	2.3	-0.45	0.02	-0.76	0.05	0.35	0.02	0.60	0.05
1987	-16	1.0	-28	2.3	-0.41	0.02	-0.72	0.05	0.33	0.02	0.55	0.05
1988	-17	0.9	-26	2.3	-0.44	0.02	-0.69	0.05	0.35	0.02	0.55	0.05
1989	-17	0.9	-28	2.3	-0.41	0.02	-0.74	0.05	0.29	0.02	0.55	0.05
1990	-21	0.9	-32	2.3	-0.48	0.02	-0.73	0.05	0.35	0.02	0.49	0.05
1991	-24	0.9	-35	2.2	-0.56	0.02	-0.92	0.05	0.42	0.02	0.71	0.05
1992	-25	0.9	-39	2.2	-0.59	0.02	-1.01	0.05	0.44	0.02	0.75	0.05
1993	-26	0.9	-37	2.2	-0.67	0.02	-1.01	0.05	0.50	0.02	0.76	0.05
1994	-27	0.9	-38	2.2	-0.70	0.02	-1.08	0.04	0.53	0.02	0.80	0.05
1995	-26	0.9	-38	2.2	-0.74	0.02	-1.07	0.04	0.56	0.02	0.83	0.05
1996	-29	0.9	-42	2.1	-0.80	0.02	-1.13	0.04	0.61	0.02	0.85	0.05
1997	-29	0.9	-40	2.1	-0.82	0.02	-1.20	0.04	0.64	0.02	0.95	0.05
1998	-29	0.9	-38	2.1	-0.84	0.02	-1.15	0.04	0.66	0.02	0.92	0.05
1999	-29	0.9	-40	2.1	-0.84	0.02	-1.14	0.04	0.68	0.02	0.91	0.05
2000	-28	0.9	-40	2.1	-0.82	0.02	-1.13	0.04	0.67	0.02	0.87	0.05
2001	-29	0.9	-40	2.1	-0.83	0.02	-1.13	0.04	0.67	0.02	0.90	0.05
2002	-29	0.9	-40	2.1	-0.79	0.02	-1.10	0.04	0.64	0.02	0.87	0.05
2003	-31	0.9	-41	2.1	-0.83	0.02	-1.09	0.04	0.67	0.02	0.86	0.05
2004	-30	0.9	-39	2.1	-0.83	0.02	-1.09	0.04	0.68	0.02	0.86	0.05
2005	-29	0.9	-42	2.1	-0.82	0.02	-1.15	0.04	0.70	0.02	0.90	0.05
2006	-30	0.9	-41	2.1	-0.80	0.02	-1.08	0.04	0.66	0.02	0.86	0.05
2007	-29	0.9	-42	2.0	-0.77	0.02	-1.04	0.04	0.63	0.02	0.78	0.05
2008	-28	0.9	-44	2.0	-0.77	0.02	-1.07	0.04	0.64	0.02	0.80	0.05
2009	-29	0.9	-44	2.0	-0.77	0.02	-1.12	0.04	0.62	0.02	0.85	0.05
2010	-29	0.9	-46	2.0	-0.75	0.02	-1.15	0.04	0.60	0.02	0.90	0.05
2011	-29	0.9	-45	2.0	-0.74	0.02	-1.11	0.04	0.60	0.02	0.85	0.05
Controls	No		No		No		No		No		No	

Table A-1: (Continued)

	Logistic regression on living > 50 km				OLS on distance in km			
	from father		from mother		to father		to mother	
	log odds	se	log odds	se	beta	se	beta	se
Constant	-1.41	0.02	-1.13	0.04	38	0.8	46	2.1
1975	-0.08	0.02	-0.10	0.06	-2	0.9	-5	2.4
1976	-0.17	0.03	-0.33	0.06	-4	0.9	-10	2.3
1977	-0.23	0.03	-0.38	0.06	-10	0.9	-15	2.3
1978	-0.25	0.03	-0.37	0.06	-9	0.9	-11	2.3
1979	-0.31	0.03	-0.51	0.06	-10	0.9	-15	2.3
1980	-0.32	0.03	-0.52	0.06	-13	0.9	-14	2.2
1981	-0.38	0.03	-0.59	0.06	-15	0.9	-19	2.2
1982	-0.49	0.03	-0.57	0.06	-19	0.9	-23	2.2
1983	-0.51	0.03	-0.76	0.06	-18	0.9	-25	2.2
1984	-0.44	0.03	-0.69	0.06	-16	0.9	-22	2.3
1985	-0.44	0.03	-0.68	0.06	-16	0.9	-22	2.3
1986	-0.46	0.03	-0.76	0.06	-16	0.9	-23	2.3
1987	-0.43	0.03	-0.85	0.07	-16	0.9	-24	2.3
1988	-0.46	0.03	-0.76	0.06	-17	0.9	-22	2.3
1989	-0.49	0.03	-0.78	0.06	-17	0.9	-24	2.3
1990	-0.60	0.03	-0.84	0.06	-21	0.9	-28	2.2
1991	-0.71	0.03	-1.03	0.06	-24	0.9	-32	2.2
1992	-0.75	0.03	-1.21	0.07	-26	0.9	-36	2.2
1993	-0.81	0.03	-1.19	0.07	-28	0.9	-34	2.2
1994	-0.86	0.03	-1.22	0.07	-28	0.9	-35	2.2
1995	-0.81	0.03	-1.17	0.06	-27	0.9	-34	2.1
1996	-0.97	0.03	-1.37	0.07	-30	0.9	-38	2.1
1997	-0.95	0.03	-1.38	0.07	-29	0.9	-35	2.1
1998	-0.96	0.03	-1.25	0.06	-29	0.9	-32	2.1
1999	-0.92	0.03	-1.29	0.06	-29	0.9	-33	2.1
2000	-0.88	0.03	-1.37	0.06	-28	0.9	-32	2.1
2001	-0.91	0.03	-1.36	0.06	-28	0.9	-31	2.1
2002	-0.90	0.03	-1.30	0.06	-28	0.9	-31	2.1
2003	-0.97	0.03	-1.38	0.06	-30	0.9	-31	2.1
2004	-0.94	0.03	-1.33	0.06	-30	0.9	-30	2.1
2005	-0.92	0.03	-1.44	0.06	-28	0.9	-32	2.1
2006	-0.94	0.03	-1.34	0.06	-29	0.9	-31	2.1
2007	-0.90	0.03	-1.44	0.06	-29	0.9	-32	2.1
2008	-0.85	0.03	-1.51	0.06	-28	0.9	-33	2.1
2009	-0.95	0.03	-1.57	0.06	-30	0.9	-34	2.0
2010	-0.91	0.03	-1.62	0.06	-29	0.9	-35	2.0
2011	-0.87	0.03	-1.54	0.06	-29	0.9	-34	2.0
Controls	No		No		Yes		Yes	

Note: All variables are measured the year after separation

Table A-2: Estimates from OLS and logistic regressions. Also presented in Figures 7 to 12. Separate analyses by income quintile

	Distance to father									
	Q1		Q2		Q3		Q4		Q5	
	beta	se	beta	se	beta	se	beta	se	beta	se
Intercept	46.1	2.2	40.2	1.6	40.1	1.6	42.1	1.7	57.7	2.2
Year of separation										
1974	ref.		ref.		ref.		ref.		ref.	
1975	-2.4	2.6	-4.0	1.9	-1.8	1.7	-3.1	1.9	-1.4	2.5
1976	3.8	2.7	-6.3	1.9	-6.6	1.7	-1.7	2.0	-4.3	2.6
1977	-8.6	2.6	-8.8	1.8	-9.7	1.7	-10.1	2.0	-11.8	2.6
1978	-5.7	2.6	-9.1	1.8	-9.3	1.7	-5.5	2.0	-16.8	2.5
1979	-5.9	2.6	-14.1	1.8	-10.7	1.7	-5.6	2.1	-10.7	2.6
1980	-11.2	2.5	-14.7	1.8	-9.9	1.8	-13.7	2.1	-8.3	2.7
1981	-11.5	2.5	-19.3	1.8	-13.3	1.8	-6.1	2.1	-16.5	2.8
1982	-13.5	2.5	-23.0	1.7	-15.2	1.8	-13.9	2.2	-21.4	2.8
1983	-15.4	2.5	-20.4	1.7	-13.6	1.8	-16.0	2.2	-22.0	2.8
1984	-11.6	2.5	-18.7	1.7	-15.3	1.8	-13.0	2.2	-11.0	2.7
1985	-12.8	2.5	-17.1	1.8	-16.5	1.8	-11.2	2.1	-18.2	2.7
1986	-11.3	2.6	-17.6	1.8	-15.6	1.7	-19.0	2.0	-19.8	2.5
1987	-14.2	2.7	-18.2	1.9	-15.2	1.8	-16.7	2.0	-18.6	2.5
1988	-13.5	2.7	-18.4	1.9	-15.6	1.7	-19.0	1.9	-22.0	2.4
1989	-8.5	2.6	-15.6	1.9	-16.9	1.7	-24.5	1.9	-26.4	2.4
1990	-12.4	2.5	-23.3	1.8	-20.9	1.7	-26.7	2.0	-26.1	2.5
1991	-18.8	2.4	-21.0	1.8	-25.1	1.7	-28.4	1.9	-35.5	2.4
1992	-21.7	2.3	-26.1	1.7	-25.2	1.7	-27.2	2.0	-35.0	2.5
1993	-25.3	2.3	-27.7	1.7	-24.8	1.7	-28.3	1.9	-33.3	2.5
1994	-26.6	2.3	-26.3	1.7	-27.1	1.7	-29.2	1.9	-35.6	2.4
1995	-20.6	2.3	-27.4	1.8	-25.5	1.7	-27.5	1.9	-36.4	2.4
1996	-24.7	2.3	-27.9	1.8	-28.2	1.7	-33.9	1.8	-41.0	2.3
1997	-23.5	2.4	-25.8	1.8	-27.4	1.7	-32.8	1.8	-43.8	2.3
1998	-24.5	2.3	-26.7	1.8	-25.9	1.7	-33.3	1.7	-41.4	2.2
1999	-25.9	2.4	-25.1	1.9	-21.6	1.7	-33.4	1.7	-42.3	2.2
2000	-22.3	2.4	-20.0	2.0	-22.3	1.8	-31.5	1.8	-45.2	2.2
2001	-24.0	2.5	-22.3	2.0	-21.3	1.8	-32.0	1.8	-44.4	2.1
2002	-19.5	2.5	-16.4	2.1	-24.5	1.8	-34.3	1.8	-43.8	2.1
2003	-23.0	2.5	-22.9	2.1	-22.6	1.9	-34.4	1.8	-47.3	2.1
2004	-22.1	2.5	-21.6	2.2	-22.5	1.9	-33.5	1.8	-48.0	2.1
2005	-20.7	2.5	-14.4	2.2	-25.3	2.0	-31.8	1.8	-46.1	2.1
2006	-19.6	2.5	-20.2	2.3	-20.6	2.1	-32.3	1.8	-48.6	2.1
2007	-21.5	2.5	-21.9	2.4	-21.5	2.1	-31.2	1.8	-45.7	2.1
2008	-15.6	2.4	-19.5	2.3	-20.6	2.1	-33.1	1.8	-46.9	2.1
2009	-18.7	2.4	-23.3	2.3	-24.3	2.2	-30.6	1.8	-49.2	2.1
2010	-19.3	2.5	-26.1	2.4	-20.5	2.2	-31.5	1.8	-47.6	2.1
2011	-18.8	2.5	-19.0	2.4	-17.6	2.3	-30.7	1.9	-50.0	2.1
Marital status										
Cohabiting	ref.		ref.		ref.		ref.		ref.	
Married	4.0	0.6	2.6	0.5	3.2	0.5	2.9	0.4	4.6	0.5
Population size of municipality										
<20 000	ref.		ref.		ref.		ref.		ref.	
20 000–39 999	25.0	0.8	16.9	0.7	11.3	0.7	12.5	0.7	14.8	0.7
40 000–79 999	17.4	0.8	12.5	0.7	7.5	0.7	9.7	0.7	10.5	0.7
80 000<	12.4	0.8	10.4	0.7	6.6	0.7	8.8	0.7	10.2	0.7
Stockholm, Gothenburg, Malmö	10.6	0.8	4.8	0.7	2.4	0.7	5.4	0.7	8.8	0.7

Table A-2: (Continued)

	Distance to father									
	Q1		Q2		Q3		Q4		Q5	
	beta	se	beta	se	beta	se	beta	se	beta	se
Intercept	46.1	2.2	40.2	1.6	40.1	1.6	42.1	1.7	57.7	2.2
Number of siblings										
0	5.4	0.8	4.7	0.6	3.0	0.6	5.2	0.6	5.5	0.7
1	ref.		ref.		ref.		ref.		ref.	
2	-0.4	0.7	3.0	0.6	2.7	0.5	3.4	0.5	2.3	0.5
3	2.6	0.9	4.9	0.7	4.8	0.7	5.5	0.7	6.1	0.7
4+	4.5	0.8	6.4	0.7	5.6	0.8	8.9	0.8	11.5	0.9
Age of child at separation										
1	4.1	1.3	4.1	1.2	8.9	1.4	12.0	1.5	16.4	2.0
2	2.3	1.1	2.4	0.9	3.1	1.0	5.4	1.1	9.9	1.5
3	ref.		ref.		ref.		ref.		ref.	
4	-2.0	1.1	-0.3	0.9	-2.5	0.9	-1.3	1.0	-3.4	1.3
5	-2.3	1.2	-1.0	1.0	-2.3	1.0	-1.3	1.0	-4.7	1.2
6	-2.9	1.2	0.3	1.0	-3.5	1.0	-3.3	1.0	-5.0	1.2
7	-5.0	1.3	-1.8	1.0	-4.6	1.0	-3.1	1.0	-6.7	1.2
8	-5.3	1.3	-3.4	1.1	-3.9	1.0	-4.1	1.0	-7.3	1.2
9	-4.7	1.4	-2.2	1.1	-6.4	1.1	-6.5	1.0	-9.9	1.2
10	-8.2	1.4	-1.6	1.2	-7.0	1.1	-4.1	1.1	-7.4	1.2
11	-6.7	1.5	-3.2	1.2	-5.0	1.1	-6.3	1.1	-8.4	1.3
12	-7.2	1.5	-3.3	1.2	-6.5	1.2	-6.2	1.1	-8.9	1.3
13	-7.2	1.6	-3.5	1.3	-7.8	1.2	-6.2	1.1	-7.9	1.3
14	-8.4	1.6	-5.3	1.3	-8.4	1.2	-4.8	1.1	-8.7	1.3
15	-9.9	1.6	-7.1	1.3	-7.9	1.3	-7.6	1.1	-7.2	1.3
16	-10.4	1.7	-5.3	1.4	-7.3	1.3	-5.6	1.2	-5.9	1.3
17	-9.7	1.7	-5.6	1.4	-6.9	1.3	-5.8	1.2	-3.8	1.3

Table A-2: (Continued)

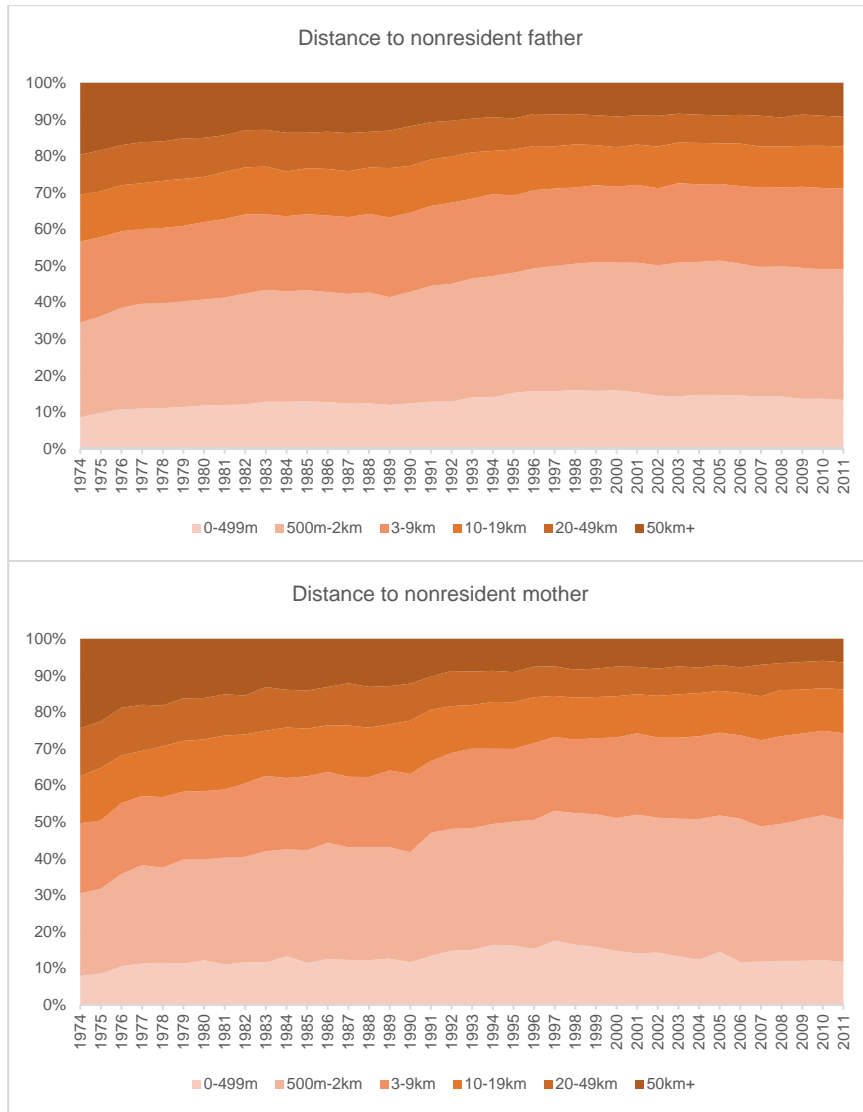
	Distance to mother									
	Q1 beta	se	Q2 beta	se	Q3 beta	se	Q4 beta	se	Q5 beta	se
Intercept	57.9	5.6	53.5	5.3	46.0	4.5	32.1	4.9	60.0	5.1
Year of separation										
1974	ref.		ref.		ref.		ref.		ref.	
1975	-5.3	6.3	-6.2	5.5	-7.1	4.9	0.5	5.5	-10.3	6.4
1976	2.2	6.2	-12.7	5.4	-18.0	4.7	-4.1	5.3	-21.0	6.3
1977	-6.0	6.3	-22.8	5.3	-19.9	4.6	0.4	5.2	-29.7	6.0
1978	5.0	6.5	-6.4	5.3	-24.1	4.7	-6.5	5.1	-28.6	5.8
1979	-18.3	6.4	-13.8	5.1	-13.4	4.6	-10.0	5.2	-30.7	5.9
1980	-7.4	6.1	-11.9	5.1	-20.2	4.6	-12.0	5.3	-24.9	6.1
1981	-14.2	6.0	-21.9	5.2	-25.6	4.6	-4.2	5.2	-33.1	6.3
1982	-16.7	5.8	-24.8	5.1	-22.6	4.5	-16.9	5.3	-47.7	6.4
1983	-27.5	6.0	-24.1	5.1	-27.0	4.5	-14.3	5.3	-45.7	6.3
1984	-19.7	6.3	-24.6	5.1	-25.1	4.5	-8.9	5.4	-25.9	6.4
1985	-22.4	6.4	-24.9	5.2	-21.4	4.5	-14.7	5.3	-37.9	6.1
1986	-19.1	6.6	-23.7	5.4	-27.7	4.5	-16.0	5.1	-39.6	5.8
1987	-33.1	7.3	-18.8	5.6	-26.8	4.6	-18.7	5.1	-37.5	5.7
1988	-21.8	7.3	-21.7	5.7	-24.6	4.5	-14.5	5.0	-40.9	5.6
1989	-23.6	7.2	-25.4	5.6	-31.4	4.6	-13.4	5.0	-38.6	5.4
1990	-20.1	6.7	-34.4	5.4	-29.8	4.4	-21.8	5.1	-43.0	5.7
1991	-36.6	6.3	-30.4	5.2	-33.4	4.4	-25.6	5.0	-50.7	5.5
1992	-37.0	6.2	-32.9	5.2	-40.6	4.4	-31.2	5.1	-51.8	5.6
1993	-33.9	6.3	-29.2	5.1	-40.6	4.4	-28.9	5.0	-51.1	5.6
1994	-36.6	6.2	-32.5	5.1	-38.6	4.3	-28.7	5.0	-49.2	5.5
1995	-37.5	6.0	-24.8	5.3	-39.9	4.4	-29.3	4.8	-52.3	5.3
1996	-37.8	6.0	-38.6	5.3	-39.9	4.4	-32.6	4.8	-53.6	5.2
1997	-42.4	6.0	-33.2	5.5	-32.8	4.4	-30.7	4.7	-51.1	5.1
1998	-42.3	6.0	-31.5	5.6	-26.7	4.4	-24.7	4.7	-53.5	5.0
1999	-34.3	6.0	-24.1	5.7	-35.7	4.5	-29.6	4.6	-52.3	5.0
2000	-28.5	6.3	-32.7	5.9	-29.7	4.5	-28.9	4.7	-53.6	5.0
2001	-35.6	6.3	-28.3	5.9	-25.4	4.6	-23.3	4.6	-55.4	5.0
2002	-34.6	6.2	-23.7	5.8	-25.9	4.7	-26.5	4.7	-54.7	5.0
2003	-26.2	6.2	-31.8	5.9	-30.1	4.7	-21.6	4.7	-57.1	4.9
2004	-12.5	6.2	-18.3	6.0	-28.1	4.9	-25.6	4.7	-57.7	4.9
2005	-33.8	6.3	-28.0	6.2	-27.3	5.0	-25.8	4.8	-56.0	4.9
2006	-27.8	6.2	-19.2	6.3	-23.5	5.0	-28.5	4.8	-57.3	4.9
2007	-31.3	6.2	-21.8	6.0	-23.9	5.1	-24.1	4.8	-58.3	4.9
2008	-31.8	5.8	-34.1	6.1	-22.7	5.2	-22.7	4.9	-59.2	4.9
2009	-31.4	5.8	-26.1	6.1	-31.7	5.1	-26.0	4.8	-58.8	4.9
2010	-36.5	5.8	-22.2	6.3	-32.3	5.2	-27.5	4.8	-60.2	4.9
2011	-25.7	5.8	-31.6	6.3	-33.9	5.2	-23.1	4.9	-59.7	4.9
Marital status										
Cohabiting	ref.		ref.		ref.		ref.		ref.	
Married	3.2	1.7	3.8	1.5	4.6	1.2	5.9	1.0	1.6	0.6
Population size of municipality										
<20 000	ref.		ref.		ref.		ref.		ref.	
20 000-39 999	20.2	2.3	9.3	2.2	14.7	1.8	12.1	1.5	11.2	0.9
40 000-79 999	15.6	2.4	9.6	2.3	8.6	1.8	7.9	1.5	5.4	0.8
80 000<	12.2	2.4	7.7	2.3	8.1	1.8	6.1	1.5	4.5	0.8
Stockholm, Gothenburg, Malmö	7.8	2.5	-0.6	2.4	4.3	1.9	4.1	1.5	5.0	0.8

Table A-2: (Continued)

	Distance to mother									
	Q1 beta	se	Q2 beta	se	Q3 beta	se	Q4 beta	se	Q5 beta	se
Intercept	57.9	5.6	53.5	5.3	46.0	4.5	32.1	4.9	60.0	5.1
Number of siblings										
0	4.7	2.2	9.5	1.9	9.5	1.5	6.1	1.2	6.2	0.8
1	ref.		ref.		ref.		ref.		ref.	
2	1.9	1.9	2.7	1.5	5.0	1.2	5.4	1.0	2.2	0.6
3	4.9	2.3	6.6	1.9	3.0	1.6	7.5	1.4	6.0	1.0
4+	4.1	2.3	13.2	2.1	10.4	1.9	13.5	1.7	15.0	1.3
Age of child at separation										
1	7.6	7.0	1.1	8.0	11.4	7.8	8.9	8.6	32.7	5.5
2	6.9	3.6	-2.2	4.1	4.6	3.9	3.2	3.8	7.5	2.7
3	ref.		ref.		ref.		ref.		ref.	
4	-0.3	3.3	2.1	3.4	-0.5	2.9	-1.2	2.6	0.6	1.8
5	2.2	3.5	2.0	3.4	1.0	2.8	-2.2	2.6	-0.8	1.8
6	-4.5	3.5	1.6	3.4	-1.1	2.8	1.2	2.5	-0.7	1.8
7	2.3	3.7	-3.3	3.4	-2.9	2.9	-3.4	2.5	-2.5	1.7
8	-5.8	3.7	-2.4	3.4	-2.1	2.9	-2.8	2.5	-1.1	1.7
9	0.0	3.8	-4.8	3.4	-3.3	2.9	-0.5	2.6	-1.4	1.7
10	-1.7	3.8	-4.4	3.4	-1.6	2.9	-0.8	2.5	-1.4	1.7
11	-7.7	3.9	-9.6	3.5	-2.4	2.9	-1.2	2.5	-0.9	1.7
12	-6.5	3.9	-8.2	3.5	-4.6	2.9	1.1	2.5	0.7	1.7
13	-5.7	3.9	-3.9	3.5	-2.1	2.9	-2.2	2.5	0.8	1.7
14	-4.0	4.0	-4.4	3.5	-3.4	2.8	0.5	2.5	1.3	1.7
15	-3.9	4.0	-6.5	3.5	1.0	2.8	0.9	2.5	5.7	1.7
16	-6.0	4.0	-3.3	3.5	-1.2	2.8	1.1	2.5	6.5	1.7
17	1.7	4.2	-6.9	3.5	0.0	2.8	3.2	2.5	9.6	1.7

Note: All variables are measured the year after separation

Figure A-1: Categorical distance to nonresident father and mother over time



Note: Distance is measured the year after separation

Figure A-2: Percentage of 30–49-year-olds in Sweden who move to another county or another municipality in a given year

