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# Childbearing across Partnerships in Australia, the United States, Norway and Sweden

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## Abstract

This paper compares mothers' experience of having children with more than one partner in two liberal welfare regimes (the United States and Australia) and two social democratic regimes (Sweden and Norway). We use survey-based union and birth histories in Australia and the United States and data from national population registers in Norway and Sweden to estimate the likelihood of experiencing childbearing across partnerships at any point in the childbearing career. We find that births with new partners constitute a substantial proportion of all births in each country we study. Despite quite different arrangements for social welfare, the determinants of childbearing across partnerships are very similar. Women who had their first birth at a very young age or who are less well educated are most likely to have children with different partners. Socioeconomic differentials in childbearing across partnerships appeared to be stronger in the United States, but not in comparison to differentials in childbearing in the same union. Thus, no strong evidence was found for a steeper educational gradient in the liberal as opposed to social democratic welfare regimes. The risk of childbearing across partnerships increased dramatically in all countries from the 1980s to the 2000s, and the educational differential also increased; again, however, the increases were not associated with welfare regime.

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## Introduction

In most wealthy countries, cohabitation, divorce, non-union or nonmarital childbearing and repartnering have become or are becoming common features of the family system. As a result, the experience of having children with more than one partner is also on the increase. Pioneering research on childbearing across partnerships[2] found that a substantial component of total fertility occurred in remarriage (e.g., Bumpass 1984; Thornton 1978). In the following decades, non-marital births, cohabitation, separation and non-marital repartnering generated increased attention to the phenomenon (Furstenberg and King 1999). A few recent studies provide evidence on prevalence in the United States, Australia and Norway (Meyer, Cancian and Cook 2005; Carlson and Furstenberg 2006; Gray and Evans 2008; Manlove et al. 2008; Guzzo and Furstenberg 2007; Lappegård and Rønsen 2012). Only the latter two studies, however, placed the event in the context of childbearing careers where the identity of each child's other parent, as well as the child's birth order, is taken into account.

Research in the United States showed that childbearing across partnerships was associated with socioeconomic disadvantage (Carlson and Furstenberg 2006; Guzzo and Furstenberg 2007). Such patterns are consistent with socioeconomic differentials in behaviors that place parents at risk of having children with a new partner — non-union childbearing (Ventura and Bachrach 2000) and divorce (Martin 2006) or separation (Raley and Bumpass 2003). In the context of rising levels of inequality, moreover, the degree of socioeconomic differentiation in these family behaviors may also have increased (McLanahan 2004). Socioeconomic differentiation may not be so great, however, where economic inequality is lower or state support for children and families is greater (Härkönen and Dronkers 2006; Kennedy and Thomson 2010; Perelli-Harris et al. 2010).

In this paper, we consider childbearing across partnerships as an event in a woman's childbearing career—a different type of birth from a second or higher-order birth with the same partner. We complement previous analyses of this sort for men (Guzzo and Furstenberg 2007; Lappegård and Rønsen 2013). We use data from four countries with different histories and levels of non-union childbearing, cohabitation and separation/divorce to identify common features of childbearing across partnerships. We compare socioeconomic differentials across welfare regimes and within each pair of countries with similar social welfare provisions for children and their families. And we investigate the possibility of increasing differentials over time.

[2]"Childbearing across partnerships" is no more felicitous a term than "multi-partnered fertility" used in much of the previous research, but the latter term is a misnomer in the vast majority of cases where parents have children with no more than two different partners. Another option, "stepfamily fertility", may be misleading because "stepfamily" has been used only with respect to coresident partnerships and often only with respect to marriage.

## Childbearing across Partnerships in Life Courses and Kinship Systems

Over the past few decades, scholars have examined several components of family change that have been observed in most Western industrialized countries since the mid-20th century. Together, these changes are sometimes referred to as the "Second Demographic Transition" (Lesthaeghe 1995). They include postponement of parenthood and marriage as well as rising or high levels of cohabitation, nonmarital childbearing, and divorce (Lesthaeghe 1995; Van de Kaa 1987). Although these trends have been widely documented across a host of industrialized nations, notable variation exists in the timing and intensity with which they have occurred (Amato and James 2010; Kiernan 2001; Roberts et al. 2009), as well as the extent to which they are even viewed as part of a singular 'transition' in family systems (Council of Europe 1991).

Childbearing across partnerships arises from instability in adult unions during the childbearing years, the desire of single parents for new partners, and the new couple's desire for a child together. With an increasing pool of single parents and their propensity to form new partnerships, together with the value of shared children for new partnerships (Thomson et al. 2002), it is not surprising that childbearing across partnerships occurs and has potentially increased. It is important, however, to recognize that childbearing across partnerships is not new. With high mortality rates through the early 20th century in most industrialized countries, it was not uncommon to experience the death of a spouse during the childrearing years, remarry and have more children. As mortality fell, having a child with a new partner most often occurred after non-union childbearing, separation and divorce.

Childbearing across partnerships driven by union instability has potentially greater implications for family complexity than when one of the parents dies. Families continue to be a foundational unit in the social order of most societies, and the parent-child bond remains fundamental among kin relationships (Nock, Kingston and Holian 2008; Rossi and Rossi 1990). Parents are charged with socializing children to be positive and productive citizens, as well as providing for their material needs—although there is notable variation across welfare states in the extent to which childrearing is supported by public institutions (Gornick and Meyers 2003).

In the recent past, children were likely to be reared in the family unit referred to as the "structurally isolated nuclear family" where married mothers and fathers shared a residence with their biological offspring, generally living apart from extended kin (Davis 1949; Parsons 1955; Popenoe 1988). The confluence of biological relatedness, co-residence and legal ties increased the ability of parents to spend time and money on their children and clarified their rights, obligations and responsibilities. Rights, obligations and responsibilities were concentrated in the nuclear family to some extent at the expense of obligations and responsibilities to extended kin (Parsons 1955).

The rise in divorce in the late 20th century called into question the viability of the nuclear family model for organizing the care and well-being of family members. Particular attention was drawn to the ambiguities in norms, authority, legal relationships and habits that arose when parents did not live together and when they formed stepfamilies with a new partner

(Bernard 1956; Cherlin 1978; Furstenberg and Cherlin 1991; Ihinger-Tallman 1988). While some of the 'effects' of parental separation (including divorce) and stepfamily formation (by cohabitation or marriage) are certainly due to the characteristics of individuals who enter this status (Castro-Martin and Bumpass 1989; Furstenberg and Spanier 1984), it is clear that changing partners when children are involved has profound implications for the character of intra-familial relationships and broader kinship networks (Furstenberg 1990). The birth of children in the new partnership adds considerably to that complexity (Bumpass 1984), with possible adverse effects on parents' ability to provide effective parenting and sufficient economic resources for their children.

## Prevalence and Variation in Childbearing across Partnerships

As divorce replaced parental death as the primary family-disrupting event during the early 20th century, remarriage became the primary source of childbearing across partnerships. Thornton (1978) found, for example, that white U.S. women who divorced and remarried had on average 1.59 children at the end of their first marriage, 3.30 children 17 years after first marriage. The data covered childbearing during the 1950s and 1960s when cohabitation was unusual in the United States, so they likely capture most of the childbearing across partnerships that occurred. Bumpass (1984) showed that about 20 percent of children living with their mothers in 1980 had a half-sibling arising from one or the other parent's remarriage. He noted that the analysis likely missed a considerable number of half-siblings born in cohabitation, not recorded in his data. Bumpass, Sweet and Raley (1995) showed, indeed, that a significant proportion of stepfamilies were formed by cohabitation, but they did not distinguish between step-families that did and did not produce additional births. Recent studies that include cohabiters show that about half of stepfamily couples have a child together (e.g., Holland and Thomson 2010; Thomson et al. 2002; Vikat et al. 1999). In such families, at least one of the parents will then have had children with two or more partners.

A substantial minority of contemporary parents have had children with more than one partner. Carlson and Furstenberg (2006) reported that about a quarter of respondents with a new baby in the Fragile Families Study (based on an urban U.S. sample) reported that they had children from a previous relationship. Estimates for a more representative sample of U.S. fathers, not conditioned on a recent birth, are somewhat lower, about 17 percent (Guzzo and Furstenberg 2007). Gray and Evans (2008) estimated that among Australian cohorts just above childbearing age, between 10 and 17 percent of fathers, and 13 and 20 percent of mothers had a child with more than one partner. Their estimates vary depending on whether two children born outside marriage are assumed to have the same or different parents. Estimates from Danish register data indicate that about 10 percent of fathers age 38 or older had children with more than one mother (Sobotka 2008). Estimates from Norway show an increase in the proportion of men who had children with more than one mother, from less than 4 percent of those born before the Second World War to about 11 percent of those born in the early 1960s (Lappegård, Rønsen and Skrede 2011). Among parents with two or more children – the precondition for having a child with more than one partner – percentages who have done so are of course greater, ranging from 12 percent of the two-child Australian fathers to 37 percent of the two-child mothers in the U.S. Fragile Families Study.

Differential patterns of fertility and family formation have been identified as an important aspect of growing economic inequality in the United States (Cancian and Reed 2009; McLanahan and Percheski 2008). Because the less well educated are more likely to have nonmarital births (Perelli-Harris et al. 2010; Ventura and Bachrach 2000) and to be separated or divorced (Härkönen and Dronkers 2006; Martin 2006) than their higher-educated counterparts, and because they begin their childbearing at an earlier age (Wilde et al. 2010), their exposure to the risk of having a child with a new partner is greater. Education also appears to be negatively associated with entering a stepfamily in some contexts but not in others and differentially for men and women (Sweeney 2010). A lack of educational differentiation in stepfamily formation could result from two opposing processes – the less well educated are more likely to be in the pool of those at risk of forming a stepfamily but, especially in the case of men, are less attractive partners on the re-partnering market. If they do re-partner, the less well educated have fewer resources with which to support a larger family. Evidence for the overall association of socioeconomic status with childbearing across partnerships is mixed, but generally finds that the college-educated are less likely to have children with more than one partner (Carlson and Furstenberg 2006; Guzzo and Furstenberg 2007). A recent study of Norwegian men found that men with secondary education were *less* likely to have children with more than one partner, compared to those with tertiary education, consistent with the argument about partner attractiveness and resources for stepfamily childbearing. On the other hand, both education groups were less likely to experience childbearing across partnerships than men with only compulsory education (Lappegård and Rønsen 2013).

A key question in inequality research is the extent to which different welfare regimes produce different levels of inequality in terms of poverty, earnings, income, and intergenerational mobility (Breen and Jonsson 2005; Gottschalk and Smeeding 1997; Kenworthy 1999). When welfare regimes operate to reduce economic inequality overall, or direct particular support toward children and families, differentials in family behavior may also be attenuated. Income transfers to the lower economic groups, especially transfers directed to parents, should lessen economic stressors that undermine relationship stability. Such transfers also reduce economic incentives for single parents to re-partner. For those who do re-partner, however, transfers to parents reduce the costs of children and thereby differences between the lower and higher socioeconomic groups in childbearing across partnerships. Altogether, then, we would expect weaker associations between socioeconomic status and childbearing across partnerships in countries with more generous welfare provisions, especially those that are directed toward families with children.

Evidence for such context-dependent socioeconomic gradients is limited and not completely consistent. Härkönen and Dronkers (2006) find, for example, that welfare state generosity is associated with a less negative educational gradient in divorce. On the other hand, Perelli-Harris and colleagues (2010) report a strong educational gradient in non-union childbearing in both liberal and social democratic welfare regimes. Furthermore, they find that the educational gradient in cohabiting births – that in turn are associated with union instability (Andersson 2002a) – is not associated with the generosity of the welfare state.

Socioeconomic differentials in family behavior do, however, appear to be increasing as income inequality rises in wealthy countries, including those with more generous welfare regimes. The Nordic countries, with their very high levels of social welfare, experienced an increase in inequality from the mid-1980s to a similar degree as the United States (OECD 2008). Of course levels of inequality were and continued to be much lower in the Nordic countries, while the United States reached a level of inequality well above that of other liberal welfare states. Further, differential levels of inequality can be directly linked to welfare state provisions in the form of public cash transfers and household taxes (OECD 2008). The very high levels and increase in economic inequality in the United States was shown by McLanahan (2004) to be paralleled by "diverging destinies" for U.S. children, such that family instability and complexity were increasingly concentrated among those with the fewest economic resources. Her analysis of other welfare states was limited to a cross-section but found socioeconomic differences in family stability and complexity even in countries with generous provisions for social welfare. Other research has shown that since the 1980s, educational differentials in family formation and stability have increased, but the increases are not consistently associated with welfare state generosity (Hoem 1997; Härkönen and Dronkers 2006; Perelli-Harris et al. 2010). One result that does stand out, however, is the pattern first observed by McLanahan (2004) in which the United States is an outlier in terms of educational differentials in family stability and complexity (Kennedy and Thomson 2010; Thomson et al. 2012).

In this paper, we provide considerable additional data on childbearing across partnerships, with one goal to identify commonalities across national contexts. A second goal is to identify differences in socioeconomic variation under different welfare regimes and across time. We selected countries with welfare regimes characterized by Esping-Andersen (1990) as liberal (Australia and the United States) or social democratic (Norway and Sweden). The design is intended to provide both within- and across-regime variation in socioeconomic inequality and support for children and families. Our overarching hypothesis is that socioeconomic differentials in childbearing across partnerships will be smaller in the social democratic than in the liberal welfare states and will have increased over time in each country.

## Demographic and Welfare Contexts

The four countries we study are all among the highest-low fertility countries with total fertility rates above 1.7 children per woman in the early 2000s (OECD 2013). Only the United States, however, has maintained a total fertility rate as high as 2.1 (replacement level) (OECD 2013). The United States and Australia have lower proportions of nonmarital births compared to the two Nordic countries (OECD 2011), due in large part to lower prevalence of cohabitation. Estimates for the 1990s indicated that only 5–7 percent of births in Sweden and Norway occurred to women living alone compared to 17 percent in the United States (Andersson 2002a) and 8 percent in Australia (deVaus 2004). The United States is also an outlier in having the highest dissolution rates for both cohabitation and marriage (Andersson 2002b). As a result of these combined variations in family formation and dissolution, parents with children are much more likely to be living alone and at risk of childbearing with a different partner in the United States, compared to the Nordic countries and Australia.

Norway and Sweden are both classified as social democratic countries in theoretical typologies (Esping-Andersen 1990; Arts and Gelissen 2002) with high transfers and a resulting relatively low level of economic inequality (OECD 2008). Both countries have long histories of state support for parenthood (parental leave, public child care, leave for care of sick children and child allowances). Both represent the dual-earner model of family organization, though in this respect Norway is somewhat less egalitarian than Sweden (Sainsbury 2001). In particular, Norway has historically provided less access and lower subsidies for public child care, while generally favoring mothers, especially single mothers, in income support (Nordic Social-Statistical Committee 2004).

Australia and the United States were both established as British colonies and have quite heterogeneous populations in terms of ancestry and immigrant or colonial experience, compared to the Nordic countries. Both are classified among the liberal welfare states (Esping-Andersen 1990) with a minimal safety net and emphasis on means-tested benefits. Some scholars suggest, however, that Australia sits apart from other liberal welfare states because of its ‘‘more inclusive approach to social protection than the standard liberal form’’ (Arts and Gelissen 2002: 146). Castles (1998) argues that Australian’s safety net is set at a higher level than would be expected of a truly liberal welfare state. Australian income redistribution does not focus on the very poor nor does it follow a social-democratic universally focused redistribution (Castles and Mitchell 1993). Castles (2004) notes, however, that in the area of family policy and spending Australia is very similar to the United States with low levels of spending, lack of maternity leave schemes and failure to provide adequate publically funded childcare. McDonald and Moyle (2010) argue that this failure to provide services has led to a decline in fertility in liberal welfare states but that fertility in the United States is propped up by high levels of unintended pregnancy, very early childbearing and very religious sub-populations. Unintended pregnancy and early childbearing would likely produce uniquely high rates of childbearing across partnerships in the United States.

Economic inequality also varies across welfare state regimes. In the mid-1990s, the decile ratios for the top versus bottom 10 percent of the income distribution were 4.3 and 5.6, respectively, in Australia and the United States, compared to 2.8 and 2.6, respectively, in Norway and Sweden (Smeeding 2005). From the 1980s to the early 2000s, however, only Australia experienced no increase in levels of inequality (Smeeding 2005, OECD 2008).

Despite differences between countries within each pair, the two-by-two design is likely to offer more insight into the phenomenon of childbearing across partnerships than a more arbitrary set of comparative contexts. In terms of family behavior, the pool of parents at risk of re-partnering is much greater in the United States than in the other three countries, due to exceptionally high proportions of non-union births and separation. Furthermore, generous provisions to parents, especially single parents, in the Nordic welfare states reduce economic incentives to re-partner, in comparison to the United States and Australia. Again, the incentives may be much greater in the United States than in Australia. Once re-partnered, however, Nordic mothers experience lower costs of further childbearing in comparison to mothers in the United States and Australia, thus compensating to some extent for the smaller pool of parents at risk and the lower incentives to re-partner.

As discussed above, the differential resources available to persons with different levels of education could have opposing effects on childbearing across partnerships because material resources may increase union stability but also increase possibilities for re-partnering after separation. Regardless of the directional influences, however, material resources are less strongly associated with education in the social democratic welfare regimes than in the liberal welfare regimes. Thus, we expect a smaller educational gradient in childbearing across partnerships in Norway and Sweden compare to Australia and the United States. Differences in inequality between Australia and the United States may, however, also produce a difference in gradient between these two liberal welfare states. Over time, however, it is Australia that is the outlier, with relatively stable levels of economic inequality compared to the Nordic countries and the United States. Thus, educational differences in childbearing across partnerships would be expected to have shifted least in Australia, with greater change in the other three countries.

## Data and Methods

Our data come from nationally-representative surveys in Australia and the United States and from population registers in Sweden and Norway. We observe birth cohorts from 1952 to 1991. For Australia, we use data from the most recent wave (2008) of the Household, Income and Labour Dynamics in Australia (HILDA) survey, a longitudinal panel survey that began in 2001. The sampling unit is the household, selected using a multi-stage approach. Everyone aged 15 and over who resides in the household is interviewed face-to-face. In Wave 1 the household response rate was 66 per cent, and the individual response rate was 92 per cent. The attrition rate for wave 2 was 13 per cent and has dropped to 5 per cent per wave since wave 5. The attrition rate is highest for those aged 15–24, born in a non-English speaking country, of Aboriginal or Torres Strait Islander descent, and who were single, unemployed or working in low-skilled occupations (Wooden & Watson 2007; HILDA User Manual Release 8).

For the United States, we use data from the National Survey of Family Growth (NSFG), cycle 7 (continuous survey), and cycle 5 (1995), both conducted by the National Center for Health Statistics.[3] The 1995 survey sample was drawn from households interviewed in the 1993 National Health Interview Survey that had a response rate of about 95%, selecting women age 15–44 on April 1, 1995, civilian and not institutionalized. African-American and Hispanic women were oversampled. The NSFG response rate was 79% (Mosher 1998). In 2006, the NCHS inaugurated a continuous version of the NSFG, drawing household samples from primary sampling units throughout the country and selecting one respondent per household. Men and women age 15–44 are eligible to be interviewed. African-American, Hispanic and teenage respondents were oversampled. The response rate was 75% (Abma et al. 2010). By pooling data from 1995 with the 2006–2008 release of the continuous survey, we are able to cover the same female cohorts as are included in HILDA, above. Interviews with female respondents were carried out in-person using computer-assisted personal interviews (CAPI).

[3]The 2005 NSFG had an error in skip instructions that compromised the quality of union histories.

Neither the U.S. nor the Australian survey included questions about the identity of each child's father (except for children living in the household at the time of interview). Fatherhood must be inferred from the dates of births, cohabitations and marriages. HILDA contains the year and month of birth for all coresident children and non-resident children under age 24. For older nonresident children, only the age at interview is known. Year and month of all marriages are reported, but information on cohabitation is not quite complete for some respondents. Respondents report the year and month of first cohabitation, and of any cohabitation prior to a reported marriage. They also report cohabitation status at each interview, and the total number of cohabitations at the last interview. Thus, a few cohabiting unions between the first cohabitation and the last interview that did not result in marriage may be missed. The NSFGs include the year and month of each birth, cohabitation and marriage, and for unions that dissolved, the year and month of the couple's separation.

We classify children as born to a particular cohabiting or marital partner if the child's birth month falls from 6 months before the start of a union to 9 months after the union's end, presuming that the child was conceived in that union. If the 9-month period overlaps with the 6-month period before a subsequent union, we consider the child to be born in the prior, not the next union.[4] We censor observations at 6 months before the interview date, as we cannot observe union status after the interview but within 6 months of a birth. We assume that every spell in a union or between unions represents a different partner when a child is born. This means that if a first birth occurs more than 6 months before the first union or more than 9 months after a dissolved union and more than 6 months before a subsequent union, any second birth is classified as with a new partner.[5] If we did not allow for the extra 6 or 9 months before or after a union, the percentage of women with two or more children and more than one father would be increased by less than one percent in Australia, but by about 3 percent in the United States. [6]

For Norway and Sweden, we use data from the national population registers. Every legal resident of each country is assigned a unique person number that can be used to link such registered events as births, marriages, divorces, place of residence, immigration, etc. For each birth in Sweden, we know the child's birth month and year and can identify the child's mother and father. Thus birth histories can be created from the mother's and the father's point of view. In a very small proportion of cases, fathers are not identified, but an unknown father can be presumed not to be the same person as the father of an earlier- or later-born child, whether identified or not. Thus, without reference to marriage or union histories we are able to directly determine whether a birth is with the same man as any prior births.

[4]In HILDA, month of birth is unknown for children age 24 and older not living in the household; these children are allocated to unions based only on the year of birth. This is most common, of course, for the older cohorts of respondents with lower proportions of non-union births. In almost all cases, year of birth is sufficient to allocate the child to a particular union or a non-union spell.

[5]A woman could, of course, have children in different union or non-union spells but with the same father, and this might be especially likely for a first birth out of union. We checked this possibility with data from the U.S. Fragile Families Study (Reichman et al. 2011). Among mothers having their first child at the study's initiation, not living with the child's father, and having a second child, 38 percent had the second child with the same father. Because the Fragile Families Study is based on a sample of disproportionately urban and poor mothers, and covers only the younger cohorts, the percentage for mothers in HILDA or the NSFG would be considerably lower. Further, in retrospective surveys, mothers may be motivated to report union dates that encompass the births of children who are born to the same father.

[6]The few cohabitations that may be unreported in the Australian survey are unlikely to influence these allocations to any significant degree. The vast majority of births classified as out of union occurred before the first union (cohabitation or marriage) that is reported by every woman.

The much greater accuracy of our estimates for Norway and Sweden than for Australia and the United States means that we must be cautious in drawing conclusions from cross-national differences in the absolute levels of childbearing across partnerships. Differences between estimates for Australia and the United States may also arise to some extent from differences in cohabitation histories and nonresponse, but the direction of these biases is not entirely clear. We discuss these issues further in the context of presenting results below.

To estimate differentials in the risk of childbearing across partnerships, we apply discrete-time hazard regression. After each birth with the first child's father, women are at risk of having no additional children, having the next child with the same man, or having the next child with another man. By including the competing risk of having an $n+1^{st}$ birth with the same man who fathered the first $n$ children, we control for predispositions to have large numbers of children. Observations are censored after the first new-partner birth. For example, women who had two children with different fathers do not contribute to the risk of having a third child with the same or a different father. Multiple births are treated as a single event, either born to the same or a different father than previous children. We censor after a multiple birth with the same father because of the likely unique consequences of multiple births for further childbearing. Thus, if a woman's first birth is a multiple birth, she does not contribute any exposure time to the estimation. Finally, we censor at the last observation or when a woman reaches age 45, whichever occurs first. In the register data we also censor at mother's death before age 45. Duration at risk is measured in calendar years since the previous birth (with the same father as for the first birth),[7] and duration dependence is specified as a quadratic function of years since the previous birth.

Socioeconomic disadvantage is represented by three indicators that are available in each data set. The mother's and maternal grandmother's highest attained education is classified as compulsory only, secondary (high school, gymnasium degree) or tertiary (college or university degree). We also include indicators for immigrant status. In the U.S.-NSFG, we know only if the woman is foreign-born or native-born. Women in HILDA were classified as born in Australia, in another English-speaking country, or in a non-English speaking country. In Sweden and Norway, we classify immigrants into five origin groups: other Nordic countries (including Sweden for Norway, Norway for Sweden); Western Europe, the United States, Canada or Australia; Eastern Europe; Asia; Central and South America. In Sweden, immigrants are women who came to Sweden before age 16; adult immigrants are not included in the analysis because we do not have birth information on children born prior to immigration.

We also control for several dimensions of the mother's birth and union history that may indicate a propensity for union stability and/or repartnering, but we are limited by information available across all four countries. Mother's age at first birth is classified as under age 20, 20–24, 25–29, and 30 and older. We include an indicator for women who were married and divorced prior to the first birth. To account for changes over time in non-union

[7]Intervals of less than 7 months were excluded, along with all subsequent intervals for a given woman, because they cast doubt on the quality of a woman's birth history. Intervals within the same calendar year were also excluded, because the smallest unit of observation is a calendar year.

childbearing and parental separation, we control for the historical period in which the interval began, i.e., the year of the *nth* birth with the first father (1970s, 1980s, 1990s, 2000s). Decade is specified as a fixed covariate for each interval, representing in a rough manner period differences in the propensities to have further children, separate and/or re-partner. We also know mother's marital status at first birth in all four countries and union status (living alone, cohabiting, married) at first birth in the survey data for Australia and the U.S.[8] We do not use this variable, however, because in the survey data we also use the information to measure childbearing with a different father. As noted above, when a first child is born out of union, we define the mother's second child – whether born in a union or not – as being with a different father. Thus, women with a non-union first birth have zero risk of having the second child with the same father, and the risk of having a second child at all is identical to the risk of having a second child with a different father.

## Results

Table 1 shows for each country the percentage of women that had at least one child with a different partner than the father of their first child. In all four countries, we observe a monotonically increasing relationship between the number of children women have had and the likelihood that they have had children with more than one partner. At each parity, for all mothers, and for all two-child mothers, the United States is an outlier with the highest proportion having a child with more than one partner. Australia is more similar to the social democratic welfare regimes in the overall level of childbearing across partnerships.

Table 2 presents descriptive statistics for birth outcomes, conditional on parity in the first childbearing union. All mothers for whom the second birth interval was observed (singleton first birth, interval across different calendar years) are included in the first panel. Progression to parity two is very high, consistent with the fertility regimes in the four countries. The proportion of women whose second birth is with a different father is, however, much higher in the United States than in the other three countries, 27 percent of second births compared to less than 15 percent in the other countries. As noted above, the Australian and U.S. estimates could be biased upwards by our assumption that second births after a first birth out of union are with a different father; but the fact that we allocated children to unions occurring within 6 months of their birth would have a countervailing effect. Differences between the United States and other countries are in large part due to the higher proportion of first births to mothers living alone, as opposed to cohabiting or married mothers. In the NSFG sample, 17 percent of first births were out of union and by our measure they produced 64 percent of second births with a different father than the first. Corresponding estimates for the HILDA sample are 11 percent and 45 percent. We cannot directly observe non-union births in the Norwegian register data for the period studied here, but for more recent periods, estimates from registers are 8 to 12 percent.[9] In Sweden, register-based estimates are between 8 to 10 percent for all births, somewhat higher for first births, during the periods we observe (Thomson and Eriksson 2010).

[8]Cohabitation is not registered in the Nordic countries but can be estimated with residential data for partners who have children together. Such estimates were not available in Norway for the entire period observed.
[9]Statistics Norway StatBank, Table 05525, Live births by cohabitation status, www.ssb.no

Parallel data for mothers who had two children with the first father, whose second birth was singleton, and who could be observed in the following calendar year are presented in the second panel. After two children with the same man, Nordic mothers are more likely to have a third birth. Differences in the likelihood of a birth with a different partner are, however, not very pronounced, 10 percent of third births in Australia, a little more than 12 percent in the other countries. This is further evidence that the cumulative differences across countries shown in Table 1 arise in large part from the very high proportion of second births occurring after a non-union birth in the United States. The last two panels show that Nordic mothers are much less likely to have a fourth and fifth birth after three and four with the same father, compared to their U.S. and Australian counterparts. At the same time, the United States is again an outlier in the proportion of fourth births with a different father. After four births with the same man, the very few fifth births are almost all with the same father, across countries.

Table 3 presents descriptive statistics for the maternal characteristics available across all four data sets that we hypothesize are associated with the propensity to have a child with more than one father. The distribution of maternal characteristics is based on the sample of mothers observed at risk of a second birth.

In the United States, first births occur disproportionately to very young mothers – nearly one-third of births occurred to teenage women, compared to 8–15 percent in the other countries. Consistent with their lower levels of cohabitation, Australian and U.S. women are more likely to have been previously married and divorced before their first birth. The proportion of immigrants is higher in Australia and Sweden than in the United States or Norway. As noted above, the Swedish data exclude women who migrated as adults in order to ensure complete birth histories.

Educational distributions across countries reflect both differences in the educational systems and differences in the relationship between education and childlessness or delayed childbearing, as our analyses are based on mothers. The same can be said for the education of children’s maternal grandmothers, who completed their education under quite different systems in the four countries. Women in Norway and Sweden whose mother’s education is unknown are predominantly immigrants whose mothers never lived in the country.

At the bottom of Table 3 are descriptive characteristics for the birth intervals observed, i.e., the second birth interval and subsequent intervals after the birth of two, three or four children with the same father. About half the intervals are observed after the first birth, another third or so after the second birth with the same father. A greater proportion of intervals are second intervals among U.S. mothers, simply because a higher proportion of mothers had a second birth with a new father and were not observed after that birth. Variation in the distribution of the decade in which birth intervals begin does not vary much across countries, reflecting their common highest-low fertility regime over the decades observed.

Table 4 presents estimates from the discrete-time hazard model for the competing risks of having a birth with the same or a different father. Entries are the relative risk ratios for

categories of maternal or interval characteristics compared to the baseline category. Because the huge number of observations in Norway and Sweden enable us to detect very small differences, while the survey samples in Australia and United States do not, we use a significance level of .05 for the latter samples, .001 for the Norwegian and Swedish populations, to identify differences of substantive interest.

The demographic underpinnings of childbearing with the same partner and with a new partner are generally parallel across countries. [10] First, the risk of having additional births declines significantly after the first two children with one father. In other words, the more births one has with the first father, the less likely one will go on to have a subsequent birth of any kind. But the decline is steeper for births with a different than with the same father, suggesting that having more children in the same union particularly diminishes the chances of having a child in a new union. The difference is especially noticeable in the United States where progressions to third and higher-order births with the same father appear to be higher than in other countries.

The risk of having another birth with the same partner is higher for women whose first birth is in their 20s as compared to women whose first birth is under age 20. By contrast, the risk of having a subsequent birth with a different partner shows a striking decline with mother's older age at first birth. In part this is a function of the shorter time available to find a new partner and have more children after a first childbearing union ends. But older first-time mothers also have more stable unions and would therefore have less exposure to the possibility of childbearing with a new partner. These patterns are quite consistent across countries.

Another indicator of union instability – marriage and divorce prior to first birth – is also associated with a higher risk of childbearing with a different partner in Norway and Sweden —but not in the United States and Australia. In the Nordic countries where marriage is least common, especially before childbearing, those who have been married and divorced before their first birth are also less likely to have a higher-order birth with the same father as their first; the same is true in the United States.

Childbearing across partnerships appears to be less likely among immigrants than among the native-born, with the exception of Nordic and western immigrants to Norway (many of whom are Swedes). Immigrant women from poorer countries have higher propensities to have additional children with the same father, except in Australia where immigrants from non-English-speaking countries were more select. They must have been able to be interviewed in English and were therefore more likely to have been admitted on work than family visas.

Turning to socioeconomic differentials, we also find a common pattern across countries. Mother's education is inversely associated the risk of a birth with a different father than that of prior children. Because the educational systems differ across countries, one cannot readily interpret differences in the relative strength of the associations. We note, however, that

[10]We cannot pool the data for interaction tests because the Swedish and Norwegian register data cannot be distributed outside secure computing environments.

although the educational gradient appears steeper in the United States than in the Nordic countries, the United States also has a relatively steep negative educational gradient in childbearing with the same partner. In Norway and Sweden, tertiary education is *positively* associated with higher-order births with the same father, creating a greater contrast with the negative gradient for births with a different partner. In Australia, the only educational difference found was a lower risk of childbearing with a different father among women with tertiary education. Net of the mother's education, maternal grandmother's education is not associated with a further decrease in childbearing with a different partner; in the Nordic countries, the net association is in fact positive. The relationships are not the result of multicollinearity, as these differentials are also observed without controls for mother's education.

Change across decades may also be viewed as a result of union instability as non-union births and parental separation increased in all four countries over the periods observed. Consistent with those trends, we find a clear increase from the 1970s onward for childbearing with different fathers. The increase is particularly striking in Norway. As noted above, the coefficients represent differences in the risk of childbearing in intervals that began in a given decade.

Finally, we consider the potential interaction between mother's education and decade – have educational differentials in childbearing across partnerships increased as has been the case for parental separation (Hoem 1997; Raley and Bumpass 2003; Thomson and Kennedy 2010)? In each country, the interaction between the woman's education and decade of interval start increased model fit. Figures 1a–d illustrate the nature of the interactions. At the left side of each figure are educational differentials in the risk of having another child with the same father, after births that occurred in the 1970s, 1980s, 1990s and 2000s; at the right side are corresponding differentials for the risk of having another child with a different father. In each case, the baseline categories are comprised of women with compulsory education giving birth in the 1970s.

In Australia, Norway and Sweden, a positive educational gradient in births with the same partner has emerged. In the United States, a U-shaped relationship does not change a great deal across time; mothers with secondary education are less likely than those without and less likely than those with tertiary education to have another child with the same father. In all countries, however, education is *negatively* associated with childbearing across partnerships and the differentials increased from the 1970s to the 2000s. The size of the increase is greatest in Norway (presented on a different scale from the other countries) and is not greater in the United States or Australia than in Sweden. Thus we find no evidence that welfare state regime or absolute level of inequality is associated with the emergence of "diverging destinies" in these four countries.

## Discussion

Childbearing across partnerships constitutes a unique event in the fertility career. Distinguishing births not only by their order and timing but also by their parentage complicates fertility analysis, but gives a more complete picture of childbearing in the

family contexts that today characterize many wealthy societies. By contrasting the risk of parity progressions with the same or a different partner, one can identify the common and contrasting antecedents of each type of birth.

We show, first, that births with different partners constitute a substantial proportion of all births to women in each of the countries we study. On the other hand, in all four countries, women are highly likely to have a second birth in the same union as the first, if the first child is born in a union. They also have very low progression probabilities to third births, whether in the same or a new union. Thus, births with a different father will not likely become a majority experience for mothers or for children. They will, however, however, likely constitute a large proportion, perhaps a majority of third and higher-order births. Childbearing across partnerships will also be much higher in contexts such as the United States where a high proportion of first births occur to women living alone, and where union instability is exceptionally high (Cherlin 2009).

What seems most striking about the characteristics associated with childbearing across partnerships is how similar they are across countries with quite different arrangements for social welfare. Much of the similarity, of course, arises from what we might call fertility fundamentals. Parity in the first childbearing union dramatically reduces further childbearing, whether with the same or a different partner. Despite the potential added value of births in stepfamilies (Thomson et al. 2002), the overall risk of a birth with a new partner is much lower when a mother already has two or more children with the first father. That is, the lower likelihood of such women forming a new partnership, especially a partnership in which they would want to have children, more than counterbalances any positive effects on childbearing of the new unions that are formed (Thomson et al. 2012).

Another common pattern is that women having their first birth at a very young age are most likely to have children with different partners. Such early births are highly likely to occur out of union. The second birth will usually follow a ‘separation’ from the first birth father and the formation of a new partnership, again at a relatively young age. Women whose first births occurred at age 30 or older are somewhat less likely to have subsequent births, but especially unlikely to have them with a different partner. Older age at first birth is associated with greater union stability; when such unions do dissolve, older mothers have less time and perhaps less inclination to find a new partner and have additional children (Thomson et al. 2012).

Having married and divorced prior to a first birth is associated with lower likelihood of childbearing with the same father, except in Australia, and higher likelihood of childbearing with a different father in the Nordic countries. Because cohabitation is so much more common in the Nordic countries, with around half of first births born to cohabiting couples (Andersson 2002a), only select groups of women will have married and divorced before having a first child. The fact that they marry at all might suggest a greater propensity for stable unions (Andersson 2002b), but divorcing before having a child could indicate a propensity for multiple partnerships, and an increased likelihood of childbearing with more than one partner. In Australia and the United States, marriage may be taken more lightly

(Cherlin 2009), so that a prior childless marriage is not as good an indicator of future union instability and childbearing in more than one union.

We did not find, as hypothesized, stronger socioeconomic differentials in childbearing across partnerships for the liberal as compared to the social democratic welfare states. While the negative educational gradient in childbearing with a new partner was steeper in the United States than in the other countries, it was also negative for childbearing with the same partner. Differences in the gradient for a same-partner or different-partner birth were most pronounced in the Nordic countries where the gradient was positive for same-partner births.

In the Nordic countries, the maternal grandmother's education was positively associated with both types of births – those with the same father and those with a different father. These differences could be due to grandparental resources that would support the births of additional grandchildren, whether in the same or a new partnership. We note further that higher divorce risks have been documented in Norway and Sweden for persons with highly-educated parents (Hoem and Hoem 1992; Lyngstad 2006) and are not attributable to parents' marital history, economic resources or urban environment (Lyngstad 2006). In Sweden, the association has been attributed to an unspecified component of 'bourgeois culture', including more liberal views of divorce (Hoem and Hoem 1992). We note further that the maternal grandmothers in our analyses are from cohorts in which the first increases in cohabitation and union dissolution were observed. It may have been the most highly educated who led the way toward new family forms and whose experience serves as a model for their daughters, despite the stability-enhancing effect of the daughters' own education.

Finally, we found in all four countries that educational differentials in childbearing across partnerships had increased from the 1970s to the 2000s. Although economic inequality is lower in social democratic than in liberal welfare states, the United States and the Nordic countries have experienced increases in inequality that may underlie these increasing differentials. On the other hand, similar increases in educational differentials were found in Australia where inequality has been moderate and relatively stable. We therefore offer an additional set of cases to support McLanahan's (2004) claim of 'diverging destinies" for children of less well- and better-educated parents, regardless of welfare regime.

Cross-national comparisons are of value not only for identifying the scope conditions for individual-level relationships but also for demonstrating the absence of contextual effects. The differences we found were overshadowed by similarities. What this tells us is that childbearing across partnerships is driven more by the somewhat similar family systems and fertility patterns of the four countries than by their welfare regimes, even while public policies are shown to influence fertility patterns (e.g., Andersson 2008). Whether the same results would hold in countries with very different family systems and fertility patterns remains to be seen.

While there are advantages to the fertility-centered approach we use here, the processes through which women come to have children with more than one partner are obscured. From previous research, we know quite a bit about the precursors to childbearing across partnerships – births out of union, parental separation, repartnering and stepfamily

childbearing. Virtually all of this research is, however, limited to one or at most two steps in the process. By focusing on the cumulative result, we draw attention to the utility of combining analyses of union and fertility events through the childrearing years so as to explicate and understand the sources of heterogeneity in the family life course (Thomson et al. 2012).

The fertility-centered approach is also an important backdrop to the family dimensions of childbearing across partnerships. When a parent has children with more than one partner, her older children acquire a half-sibling and the new child is born into a half-sibship. Half siblings may contribute to solidarity in a new family but also compete for resources, especially those provided by the older children's step-parent. The processes through which half-siblings are produced set the demographic parameters of the half-sibling relationship and possible consequences for both older and younger half-siblings (Turunen 2012). For example, the time it takes for separation, repartnering and childbearing with a new partner means that half-siblings are on average further apart in age than full siblings. Half-siblings on the mother's side are likely to live together while those produced by fathers will usually meet less frequently, if at all. As we focus on the fertility and partner parameters, we must not lose sight of their implications for the daily lives of families.

Indeed, in the same way that questions were raised in the late 20$^{th}$ century about the nature and implications of stepfamilies (Cherlin and Furstenberg 1994; Hanson et al. 1996), childbearing across partnerships represents a broader phenomenon of complex family ties that emerge when childbearing occurs amidst even greater union instability. Childbearing today is likely to occur within cohabiting unions, which are typically less stable than marital unions, and at least in the U.S., a non-trivial fraction of births occur outside of any co-residential union. To the extent that childrearing becomes more difficult or complicated in the context of childbearing across partnerships, children in such families will be disadvantaged. Given the fact that across all four countries we examined, the least well-off are the most likely to have children with more than one partner, and that these differentials have increased over time, childbearing across partnerships may be an important aspect of growing inequality and may suggest the need for new policy supports and interventions.

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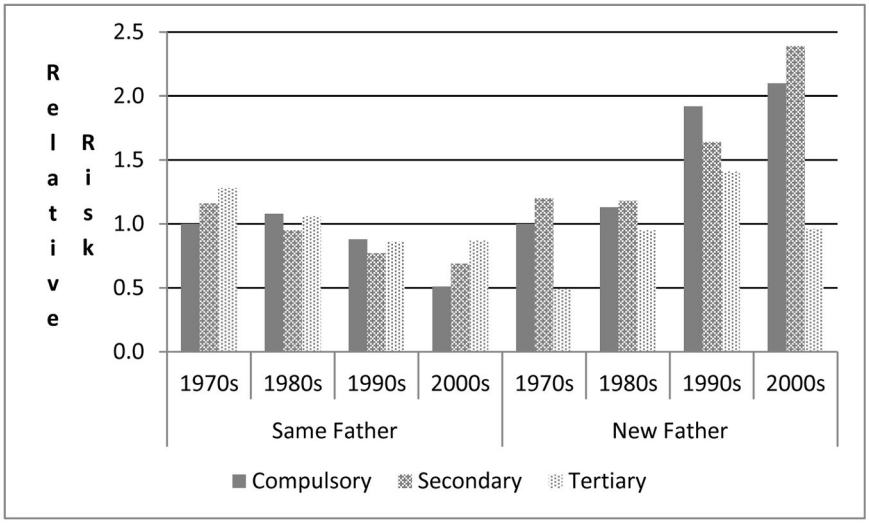


**Fig. 1a**

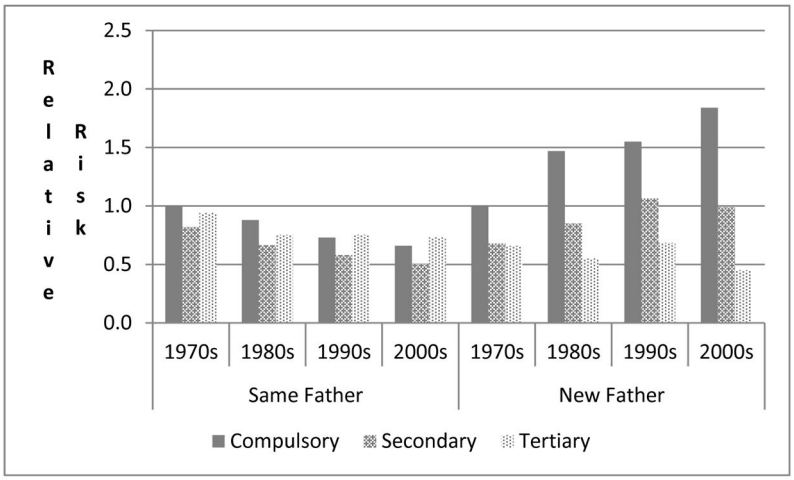


**Fig. 1b**

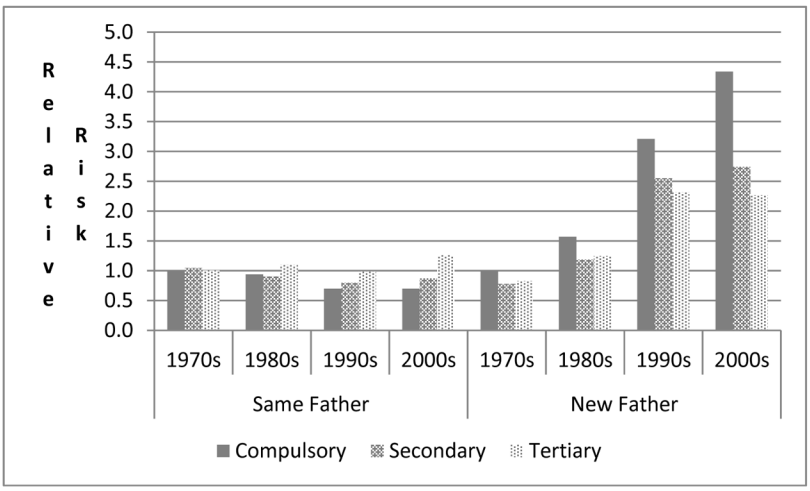


**Fig. 1c**

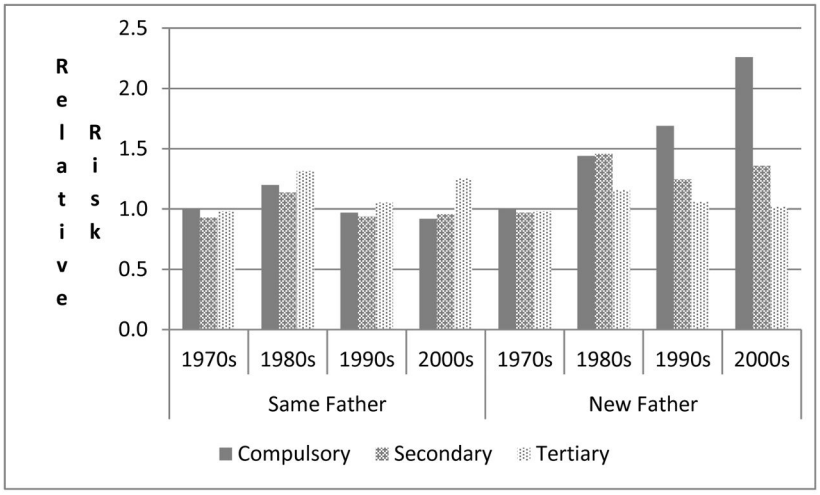


**Fig. 1d**

**Figure 1.**

**Fig. 1a** Australia: Educational Differentials in Childbearing over Time

**Fig. 1b** United States: Educational Differentials in Childbearing over Time

**Fig. 1c** Norway: Educational Differentials in Childbearing over Time

**Fig. 1d** Sweden: Educational Differentials in Childbearing over Time

**Table 1**

Percent of women who had children with two or more fathers

| | Australia | | United States | | Norway | | Sweden | |
|---|---|---|---|---|---|---|---|---|
| | **Percent** | **Number** | **Percent** | **Number** | **Percent** | **Number** | **Percent** | **Number** |
| Parity | | | | | | | | |
| Two | 17.0 | 1189 | 25.6 | 2987 | 13.4 | 358,699 | 10.1 | 627,027 |
| Three | 26.0 | 656 | 35.9 | 2159 | 24.9 | 196,008 | 23.3 | 285,996 |
| Four | 37.8 | 231 | 49.6 | 795 | 36.2 | 49,082 | 35.9 | 75,494 |
| Five | 56.5 | 64 | 57.4 | 248 | 41.2 | 12,917 | 41.3 | 20,282 |
| Two or more | 23.6 | 2,181 | 32.8 | 7,334 | 19.5 | 616,706 | 16.3 | 1,064,130 |
| All mothers | 18.0 | 2,856 | 23.3 | 10,500 | 15.9 | 766,623 | 12.6 | 1,373,522 |

*Notes*: Women born 1952–1991, children born ages 16–45, year singleton first birth, second birth exposure 1+ year Australian and U.S. estimates weighted (see text), number unweighted. Data Sources: Australia - HILDA (2008); U.S. - NSFG (1995 and 2006–08); Sweden - registers (1968–2007); Norway - registers (1970–2007)

**Table 2**

Parity Progressions with Same or Different Father

| | Birth Outcomes (Percent) | | | |
|---|---|---|---|---|
| | **Australia** | **U.S.** | **Norway** | **Sweden** |
| All mothers | | | | |
| No second birth | 22.7 | 28.9 | 18.9 | 22.5 |
| Second birth | 77.3 | 71.1 | 81.1 | 77.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Mothers with second birth | | | | |
| Second birth same father | 87.1 | 73.0 | 85.7 | 88.4 |
| Second birth different father | 12.9 | 27.0 | 14.3 | 11.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of mothers | 2,824 | 10,500 | 766,623 | 1,373,522 |
| Mothers with two children, same father | | | | |
| No third birth | 53.5 | 55.4 | 59.0 | 63.7 |
| Third birth | 46.5 | 44.6 | 41.0 | 36.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Mothers with third birth, first two same father | | | | |
| Third birth same father | 90.1 | 87.3 | 87.5 | 87.6 |
| Third birth different father | 9.9 | 12.7 | 12.5 | 12.4 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of mothers | 1,826 | 4,757 | 525,776 | 897,282 |
| Mothers with three children, same father | | | | |
| No fourth birth | 67.3 | 66.9 | 75.6 | 73.7 |
| Fourth birth | 32.7 | 33.1 | 24.4 | 23.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Mothers with fourth birth, first three same father | | | | |
| Fourth birth same father | 93.1 | 83.5 | 88.4 | 89.1 |
| Fourth birth different father | 6.9 | 16.5 | 11.6 | 10.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of mothers | 750 | 1,750 | 186,340 | 272,741 |
| Mothers with four children, same father | | | | |
| No fifth birth | 67.6 | 63.4 | 73.5 | 69.4 |
| Fifth birth | 32.4 | 36.6 | 26.5 | 30.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Mothers with fifth birth, first four same father | | | | |
| Fifth birth same father | 91.8 | 93.4 | 92.6 | 92.6 |
| Fifth birth different father | 8.2 | 6.6 | 7.4 | 7.4 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of mothers | 225 | 467 | 39,673 | 61,388 |

*Note*s: Women born 1952–1991, children born ages 16–45 years, singleton first birth, birth exposures 1+ year Australian and U.S. estimates weighted (see text), number unweighted. Data Sources: Australia - HILDA (2008); U.S. - NSFG (1995 and 2006–08); Sweden - registers (1968–2007); Norway - registers (1970–2007)

**Table 3**

Characteristics of Mothers and Birth Intervals

| | Australia | U.S. | Norway | Sweden |
|---|---|---|---|---|
| Mother's age 1st birth | | | | |
| under 20 years | 14.6 | 32.0 | 11.7 | 8.3 |
| 20–25 years | 31.1 | 41.0 | 45.8 | 41.7 |
| 26–29 years | 31.6 | 15.8 | 25.0 | 27.2 |
| 30 years or older | 22.7 | 11.1 | 17.4 | 22.8 |
| Prior marriage | | | | |
| No | 88.6 | 95.2 | 98.7 | 98.3 |
| Yes | 9.9 | 4.8 | 1.3 | 1.7 |
| Unknown | 1.5 | 0.0 | 0.0 | 0.0 |
| Immigrant | | | | |
| native born | 79.3 | 84.9 | 84.7 | 78.9 |
| group 1 | 8.3 | 15.1 | 2.7 | 4.6 |
| group 2 | 12.4 | Na | 2.5 | 1.6 |
| group 3 | na | Na | 10.1 | 14.8 |
| Unknown | 0.0 | 0.0 | 0.0 | 0.1 |
| Mother’s education | | | | |
| Compulsory | 28.9 | 17.8 | 9.0 | 11.9 |
| Secondary | 35.7 | 61.0 | 53.2 | 63.0 |
| Tertiary | 35.5 | 21.1 | 31.9 | 22.8 |
| Unknown | 0.0 | 0.0 | 6.0 | 2.3 |
| Maternal grandmother's education | | | | |
| Compulsory | 47.6 | 25.7 | 40.8 | 36.4 |
| Secondary | 11.5 | 59.2 | 36.4 | 38.3 |
| Tertiary | 30.8 | 11.5 | 7.0 | 7.3 |
| Unknown | 10.2 | 3.6 | 15.7 | 18.0 |
| Parity with first child’s father | | | | |
| One | 49.0 | 57.9 | 50.1 | 52.7 |
| Two | 33.0 | 28.7 | 34.3 | 34.4 |
| Three | 13.8 | 10.5 | 12.2 | 10.5 |
| Four | 4.3 | 2.8 | 3.4 | 2.4 |
| Decade interval start | | | | |
| < 1980 | 8.8 | 13.9 | 11.4 | 10.0 |
| 1980s | 28.1 | 31.7 | 29.4 | 30.2 |
| 1990s | 35.9 | 34.9 | 38.9 | 36.7 |
| 2000+ | 27.3 | 19.6 | 20.3 | 23.1 |
| Number of mothers | 2,824 | 10,500 | 766,623 | 1,373,522 |
| Number of intervals | 5,625 | 17,474 | 1,531,243 | 2,605,771 |

*Notes*: Women born 1952–1991, children born ages 16–45, singleton first birth, birth interval exposures 1+ year. Australian and U.S. estimates weighted (see text), number unweighted. Data Sources: Australia – HILDA (2008); U.S. – NSFG (1995 and 2006–08); Sweden – registers (1968–

2007); Norway – registers (1970–2007). Immigrant groups: Australia – 1 English–speaking countries, 2 non English–speaking countries; U.S. – 1 all immigrants; Norway/Sweden – 1 Nordic countries, 2 Western Europe, U.S., Canada, Australia, New Zealand, 3 all other countries.

**Table 4**

Relative risks of childbearing within and across partnerships

| | Relative Risk Ratio, Birth with Same, Different Father vs. No Birth | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Australia | | United States | | Norway | | Sweden | |
| | Same | Different | Same | Different | Same | Different | Same | Different |
| Parity (first child's father) | | | | | | | | |
| one child | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| two children | 0.37* | 0.21* | 0.61* | 0.23* | 0.33* | 0.18* | 0.26* | 0.19* |
| three children | 0.24* | 0.06* | 0.43* | 0.14* | 0.18* | 0.07* | 0.18* | 0.09* |
| four children | 0.23* | 0.06* | 0.48* | 0.09* | 0.22* | 0.05* | 0.23* | 0.07* |
| Mother's Age 1st Birth | | | | | | | | |
| under 20 years | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 20–25 years | 1.18* | 0.53* | 1.23* | 0.46* | 1.17* | 0.48* | 1.08* | 0.49* |
| 26–29 years | 1.10 | 0.14* | 1.25* | 0.14* | 1.20* | 0.17* | 1.05* | 0.17* |
| 30 years or older | 0.84* | 0.08* | 1.00 | 0.06* | 0.93* | 0.07* | 0.82* | 0.07* |
| Prior marriage < 1st birth | | | | | | | | |
| No | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Yes | 1.06 | 1.22 | 0.79* | 0.92 | 0.70* | 1.36* | 0.78* | 1.53* |
| Unknown | 0.89 | 1.59 | na | Na | na | Na | na | na |
| Immigrant | | | | | | | | |
| native born | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| group 1 | 0.88 | 0.78 | 1.31* | 0.66* | 1.00 | 1.34* | 0.77* | 0.96* |
| group 2 | 0.74* | 0.39* | na | Na | 1.15* | 1.06 | 0.93* | 0.86* |
| group 3 | na | na | na | Na | 1.24* | 0.78* | 1.06* | 0.90* |
| Unknown | na | na | na | Na | 1.29* | 0.18 | 1.26* | 1.28* |
| Mother's education | | | | | | | | |
| Compulsory | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Secondary | 0.96 | 0.99 | 0.78* | 0.63* | 0.96 | 0.85* | 0.96* | 0.83* |
| Tertiary | 1.10 | 0.70* | 0.96 | 0.44* | 1.18* | 0.76* | 1.12* | 0.75* |

| | Relative Risk Ratio, Birth with Same, Different Father vs. No Birth | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Australia | | United States | | Norway | | Sweden | |
| | Same | Different | Same | Different | Same | Different | Same | Different |
| Unknown | na | na | na | Na | 0.94* | 0.63* | 0.76* | 0.44* |
| Maternal grandmother's education | | | | | | | | |
| Compulsory | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Secondary | 0.94 | 1.14 | 0.93 | 0.98 | 1.12* | 1.00* | 1.05* | 1.22* |
| Tertiary | 1.01 | 1.10 | 0.92 | 1.08 | 1.26* | 1.12* | 1.22* | 1.29* |
| Unknown | 1.04 | 1.52* | 0.98 | 1.25* | 1.12* | 0.85* | 0.99 | 0.93* |
| Decade Interval Start | | | | | | | | |
| < 1980 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1980s | 0.92 | 1.15 | 0.81* | 1.29* | 0.94 | 1.59* | 1.23* | 1.33* |
| 1990s | 0.75* | 1.74* | 0.72* | 1.53* | 0.81* | 3.17* | 1.01 | 1.38* |
| 2000+ | 0.65* | 2.04* | 0.66* | 1.53* | 0.97 | 3.61* | 1.08* | 1.57* |
| Log-Likelihood | −10304.5 | | −34400.9 | | −298119.4 | | −4723345.5 | |
| Df | 40 | | 36 | | 44 | | 44 | |
| Observations (years) | 31,176 | | 92,479 | | 11,621,623 | | 16,942,575 | |

*Notes*: Women born 1952–1991, children born ages 16–45, singleton first birth, birth interval exposures 1+ year. All estimates unweighted (see text). Data Sources: Australia – HILDA (2008); U.S. – NSFG (1995 and 2006–08); Sweden – registers (1968–2007); Norway – registers (1970–2007). Immigrant groups: Australia – 1 English–speaking countries, 2 non English–speaking countries; U.S. – 1 all immigrants; Norway/Sweden – 1 Nordic countries, 2 Western Europe, U.S., Canada, Australia, New Zealand, 3 all other countries.

*p<.05 in Australia, U.S.; p<.001 in Norway, Sweden