**Childbearing across partnerships in the U.S., Australia and Scandinavia**

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To be presented at the 2011 meetings of the Population Association of America
2011-03-25

In most wealthy countries of the world, cohabitation, divorce, non-union or non-marital childbearing and repartnering have become or are becoming common features of the family system. A less noticed and less well documented component of these changes is the experience of having children with more than one partner. In contexts with high levels of union stability, especially among parents, individual childbearing careers must be conceptualized not only in terms of the timing and number of births but also in terms of whether they are born in the same partnership.

Furstenberg and King (1999) were the first to identify the concept of childbearing across partnerships as a distinct demographic phenomenon.[2] A few studies have followed with data from the U.S., Australia and Norway (Carlson & Furstenberg 2006; Gray & Evans 2008 ; Manlove et al. 2008; Guzzo & Furstenberg 2007; Lappegård & Rønsen 2009). Only the latter two studies, however, placed the event in the context of fertility careers where the identity of each child's other parent as well as the child's birth order is taken into account.

All of the research to date finds that childbearing across partnerships is associated with socioeconomic disadvantage. The pattern is not particularly surprising in view of socioeconomic differentials in precipitating events – non-union births and separation or divorce. But the differentials could be moderated by the selection of socioeconomically advantaged persons into new partnerships. Furthermore, the degree of socioeconomic differentiation may depend on general levels of economic inequality or state support for children and families (Härkönen & Dronkers 2006; Perelli-Harris et al. 2010).

In this paper, we consider childbearing across partnerships as an event in the fertility career, a different type of birth from a birth with the same partner. We complement previous analyses of this sort for men (Guzzo & Furstenberg 2007; Lappegård & Rønsen 2009) by investigating women's childbearing with more than one father. 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. And finally, we compare socioeconomic

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[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 most 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 married couples.

differentials across and within each pair of countries with similar levels of economic inequality and social welfare provisions for children and their families.

Previous research

Childbearing across partnerships is not a new demographic phenomenon. In centuries past, parental mortality and remarriage of the surviving parent often produced additional births. As divorce replaced parental death as the family disrupting event, remarriage continued to be the source of childbearing across partnerships. For example, Thornton (1978) found that among white U.S. women who divorced and remarried the number of children born in first and second marriages was about the same. The data covered childbearing during the 1950s and 1960s when cohabitation was unusual in the United States. 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. Recent studies that include cohabitors show that about half of married or cohabiting couples with a stepchild eventually have a child together (e.g. Vikat, Thomson & Hoem 1999; Thomson et al. 2002; Holland & Thomson 2010). At least one of the parents will then have had children with two or more partners. This research demonstrates a higher birth risk with a new partner than with the same partner, given the same number of prior births. But the two types of birth risk are conditioned on being in a partnership and therefore do not tell us about the risk for the population as a whole of childbearing across partnerships.

A substantial minority of parents have children with more than one partner. Carlson and Furstenburg (2006) reported that about a quarter of new parents 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 20 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 parents with two children born outside marriage are assumed to have had births with the same partner or different partners. 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 & Skrede 2011).

Two studies, one in the U.S. and the other in Norway have studied childbearing across partnerships as an event in the fertility career, distinguishing the risk of a birth with the same partner as previous births from those with a new partner (Guzzo & Furstenberg; Lappegård & Rønsen 2009). Both studies considered only male fertility – somewhat unusual in fertility studies but consistent with the fact that men can more easily have children with new partners due to their longer period of fecundity and – to date – lower responsibilities for children from previous relationships. As is the case for all fertility analysis, modeling the childbearing risk incorporates the experience of those who have not yet completed childbearing. Only the Norwegian study, however, treats births with the same partner as a competing risk. The

competing risk model enables comparison of the common or different determinants of the two types of births – those with the same or those with a new partner.

The fact that childbearing across partnerships is associated with socioeconomic disadvantage (studies cited above) is for the most part due to socioeconomic differentials in rates of non-union childbearing and parental separation, both of which contribute to the risk pool for childbearing with a new partner (e.g., Härkönen and Dronkers 2006; Perelli-Harris et al. 2010). Socioeconomic differentials could, however, be moderated by positive socioeconomic selection into new partnerships and by social welfare contexts in which non-union childbearing is uncommon and parental separation not so strongly associated with socioeconomic characteristics (Kennedy & Thomson 2010).

In this paper, we provide considerable additional data on childbearing across partnerships, with one goal to identify commonalities across different national contexts. A second goal is to identify differences in socioeconomic variation under different welfare regimes. 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 will be smaller in the social democratic than in the liberal welfare states.

Demographic and Welfare Contexts

The four countries we study are all among the "highest-low" fertility countries with total fertility rates between 1.7 and 2.1 (replacement level) children per woman as of 2001.[3] The U.S. and Australia have lower rates of nonmarital childbearing (about one-third of births were nonmarital in 2000) compared to the two Nordic countries (where about half of births were nonmarital in 2000). This is due in large part to lower rates of cohabitation in the U.S. and Australia. Estimates for the 1990s indicate that only 5-7 percent of births in Sweden and Norway occurred to women living alone. In this respect, Australia is more similar to the Nordic countries than is the U.S. (8 percent and 17 percent, respectively). The U.S. is also an outlier in having the highest dissolution rates for both cohabitation and marriage. Most important for our purposes is that parents with children are much more likely to be living alone and at risk of childbearing with a different partner in the U.S., compared to the Nordic countries and Australia. (Sources include Andersson, 2002a; 2002b; Cherlin 2009; deVaus 2004; Sardon 2006a; 2006b; Sobotka and Toulemon 2008.)

Norway and Sweden are, of course, both social democratic countries with 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. Transfers are high in the Nordic countries, with a resulting relatively low level of economic inequality. Due to oil reserves, Norway is, however, a much richer country than Sweden. Australia and the U.S. were both established as British colonies and have quite heterogenous populations in terms of ancestry and immigrant or

[3] Sweden's TFR has dropped to as low as 1.4 due to shifts in birth timing, but cohort fertility remains at about two children per woman.

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. Economic inequality is much higher in both countries than in Norway and Sweden (Smeeding 2005). 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.

Data and Methods

Our data come from nationally-representative surveys in Australia and the United States and from population registers in Sweden and Norway. This means, of course, that the quality of our data is confounded with the type of welfare state regime. The implications of these differences for our analyses and results are considered in the discussion section. In three countries, we observe birth cohorts from 1952 to 1991 or 1992. In the U.S., the oldest women observed were born in 1962.

For Australia, we use data from the most recent wave (2008) of the Household, Income and Labour Dynamics in Australia (HILDA) survey, a nationally-representative longitudinal study. HILDA contains detailed information on birth and marriage histories, but information on cohabitation is limited. Respondents report the timing of the respondent's first cohabitation, any cohabitation prior to a reported marriage and the total number of cohabitations. This means that some first births will appear as occurring out of union when they in fact occurred in cohabiting unions that did not result in marriage. Because we consider women with out-of-union first births to be immediately at risk of conception with another man (see below), we may over-estimate childbearing with new partners in Australia.

For the U.S., we use data from the National Survey of Family Growth (NSFG), cycle 7 (continuous survey), conducted by the National Center for Health Statistics. Interviews are conducted 48 weeks of each year, with a new representative sample drawn every year. Samples can be accumulated across years, and new data files are released about every two years. We use data from the 2006-2008 release. Interviews of female respondents gather complete union and birth histories from which we can determine union status and union order for each birth, thus classifying births as occurring with the same or different partners.

In both the U.S. and Australian data, we do not know the identity of each child's father and must infer fatherhood from the mother's union history. We classify children born within nine months of a dissolved union to be children of that union. If a child is born 6 months or less before a union and not within nine months of a previous union, she is considered to be the child of the new partner. We censor open intervals 6 months before the interview as we cannot observe a union after the interview but within six months of the birth. If the first birth is classified as out of union, we assume that the next birth is with a different partner.

For Norway and Sweden, we use data from the national population registers, a 10 percent sample in Norway and the full population in Sweden. In Sweden, we excluded women who immigrated after age 15 so that we could observe all of their births in the Swedish registers. We use the multigeneration registers to match every woman with her children and obtain the year and month

of the child's birth. These registers also uniquely identify the father of each child; in a very small number 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 determine whether a second or higher-order birth is with the same man as the first birth.

We estimate the risk of having an $n+1^{st}$ birth with a different man than the father of the first $n$ children, for women who have one, two, three or four children with the first father. Our models include the competing risk of having an $n+1^{st}$ birth with the same man who fathered the first $n$ children. Three outcomes are therefore possible: no subsequent birth, a birth with the same father, or a birth with a different father.

Observations are censored after the first birth with a different father than earlier births. 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 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.

The duration at risk is measured in calendar years since the previous birth.[4] We estimate multinomial logistic regression models with the three outcomes and duration dependence specified as a linear and squared 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. we know only if the woman is native-born or not. Australian women 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 groups: other Nordic countries (Sweden for Norway, Norway for Sweden); Western Europe, the U.S., 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.

We control for several dimensions of the mother's birth and union history that may indicate a propensity for union stability and/or repartnering, but are limited by information available in all four countries. Mother's age at first birth is classified as under 20, 20-24, 25-29, 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 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, 2000+). In the U.S. we observe births only from 1974 and these are

[4] This means that some of the intervals are less than a full year, i.e., births within 7-11 months of each other or births 7-11 months prior to the last observation occur at intervals equal to one year. Only births within the same calendar year have exposure time zero and do not contribute to the estimated hazard.

predominantly to very young mothers, so we combine them with birth intervals beginning in the 1980s. We also know mother's marital status as 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.[5] We do not use this variable, however, because in the survey data we also use the information to measure childbearing with a different father. 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 presents descriptive statistics for birth outcomes, separately for women with one child and women who had two, three or four children with the same father. In the first panel, we show that the proportion of women whose second birth is with a different father from the first is lowest in Sweden (8.2 percent of mothers with one child, 11 percent of all second births) and highest in the U.S. (21.2 percent of all mothers, almost 30 percent of all second births). Norway and Australia are in between, but closer to Sweden than to the U.S. The differences between the U.S. 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, 19 percent of first births were out of union and by our measure they produced 67 percent of second births with a different father than the first. Corresponding estimates for Australia 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 are 8 to 12 percent.[6] In Sweden, non-union births are estimated to be between 8 to 10 percent during the periods we observe (Thomson & Eriksson 2010).

Table 1 about here

The greater propensity of American women to have births with a different father remains until the fourth child is born, where the number of observations may be too small to generate robust estimates. Australian women are about as likely as Norwegian women to have 3rd, 4th or 5th children with new fathers. Comparisons between Norway and Sweden should be robust, and suggest that Swedish women are more likely at higher than lower birth orders to have a child with another father.

Table 2 presents descriptive statistics for the maternal characteristics 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, i.e., mothers with more than one birth are not over-represented. The distributions of parity (children with the same father) and period are based on the sample of birth intervals observed, i.e., the number of mothers with two, three or four children with the same father.

[5] 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.
[6] Statistics Norway StatBank, Table 05525, Live births by cohabitation status, www.ssb.no

Table 2 about here

In the United States, first births occur disproportionately to very young mothers, many of whom are not married or cohabiting. In the other countries, first births are much less likely to occur before age 20. Swedish women have first births at older ages than Norwegian and Australian women. Consistent with their lower levels of cohabitation, Australian and U.S. women are more likely to have been married and divorced prior to a first birth. Also consistent with their extensive histories of immigration, the proportion of immigrants is higher in Australia and the U.S. than in Sweden and Norway. (Sweden's much lower proportion is due in part to having excluded adult migrants from the analysis.)

Educational distributions across countries reflect both differences in the educational systems and differences in the relationship between education and childlessness or delayed childbearing. 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. Variation in distribution of intervals across period reflect not only differences in the countries' birth rates during those periods but also the limitations of the U.S. data for observing births at older ages in the 1980s.

Table 3 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 of the vastly different number of observations, we use a significance level of .05 for Australia and the U.S., of .001 for Norway and Sweden to identify differences of substantive interest.

Table 3 about here

The demographic underpinnings of childbearing with the same partner and with a new partner are remarkably similar across countries. First, the risk of having additional births, with the same or a different partner, declines significantly after the first two children with one father. But the decline is steeper for births with a different than with the same father. The difference is especially noticeable in the U.S. where progressions to third and higher-order births with the same father are higher than in other countries.

Birth risks also generally decline with mother's age at first birth, except in the Nordic countries where women who became mothers at very young ages are less likely to have higher-order births with the same or a different partner. What is most striking here, however, is the much lower risks of having a child with a different partner for women who began their childbearing at later ages. In part this is a function of the shorter time available, if their first childbearing union ends, to find a new partner and have more children. 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 union instability – marriage and divorce prior to first birth – is also associated with a higher risk of childbearing with a different partner, except in 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 previous marriage and divorce takes more time from the woman's childbearing years, reducing her chances of having a birth with the same father as well as with a different father.

Change over time may also be viewed as a union instability indicator as non-union births and parental separation increased in all four countries over the periods observed. Controlling for fluctuations in period fertility represented by same-father births, we find a clear increase in the Nordic countries from the 1970s onward for childbearing with different fathers. The increase is particularly striking in Norway.

Turning to our primary interest, 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 previous children. This relationship is especially striking where we see that education has a positive effect on higher-order births with the same father, except in the U.S. Most of the educational differences are observed for women with college degrees. By contrast, we find no such effect – and in the Nordic countries a slight positive association of the maternal grandmother's education with childbearing across partnerships. The relationships are not the result of multicollinearity as these differentials are also observed without controls for mother's education.

Differences in childbearing by immigrant status can best be understood by contrasting effects of childbearing with the same or a different father. Except for Sweden, immigrants are less likely to have a child with a different father – as opposed to having a child with the same father. Had we included adult immigrants in the Swedish analysis, results would likely have been more similar to those for Norway. The largest differences are for immigrants from poorer countries and likely reflect cultural differences in family patterns.[7]

## 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 most 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. We do not think it likely that they will ever constitute a majority of births, however. The four countries we study have very high rates of progression to second birth in the same union as the first, if the first is born in a union. They also have very low progression rates to third births, whether in the same or a new union. Births with a different father will, 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

[7] In Australia, immigrants from non-English-speaking countries have a lower risk of childbearing overall, due in part to the selection of immigrants who were able to be interviewed in English. These immigrants are more likely to have been admitted on work than family visas and therefore less likely to have higher-order births.

such as the United States (or perhaps only in the United States) where a high proportion of first births occur to women living alone.

What seems most striking about the determinants of 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.

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.

We also find very consistent trends in the shift from same-partner to different-partner childbearing. The shifts are less marked in the U.S. where we also observed the highest levels of childbearing across partnerships. The U.S. has been an outlier among wealthy countries in its very high levels of non-union births and of parental separation and divorce. As other countries 'catch up', we would expect a higher rate of change, even if the U.S. remains at the top.

We did not find, as hypothesized, stronger socioeconomic differentials in childbearing across partnerships for the liberal as compared to the social democratic welfare states. Although college educated women in all four countries were the least likely to have a child with a different father, it is in the Nordic countries where mother's education has the stronger negative effects on childbearing across partnerships when contrasted with the positive effects on childbearing with the same partner. In the U.S., college educated women were also especially unlikely to have a child with a different partner but no less likely to have a child with the same partner, compared to those with only compulsory education.

In the Nordic countries, the maternal grandmother's education had positive effects on both types of births – those with the same father and those with a different father. In Sweden, moreover, effects were stronger for different-father births, exactly the opposite one would expect if education provides more resources for stable unions. We note that higher divorce risks have been documented in Norway and Sweden for persons with highly educated parents (Hoem & Hoem 1992; Lyngstad 2006). Lyngstad (2006) demonstrated further that the association was not due to parents' marital history, economic resources or urban environment. In Sweden, the association has been attributed to an unspecified component of 'bourgeois culture', including more liberal views of divorce (Hoem & Hoem 1992). We note further that the maternal

grandmothers in our analyses are from cohorts in which the first major 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, net of the stability-enhancing effect of the daughters' own education.

We note that cross-country 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 profiles of the four countries than by their welfare regimes. Whether the same results would hold in countries with very different family profiles 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.

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. 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.

Acknowledgements

This research was supported by the Research Council of Norway (202442/S20) and the Australian Research Council (DP0772544) as well as by our respective institutions. The Household, Income and Labour Dynamics in Australia (HILDA) Survey was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs and is managed by the Melbourne Institute of Applied Economic and Social Research. We used an extract from the 2006-2008 National Survey of Family Growth prepared by Kelly Musick, Cornell University, for the Network on Nonmarital Childbearing, Max Planck Institute for Demographic Research. The register database, Sweden in Time – Activities and Relations (STAR) is supported in part by grants from the Swedish Research

Council. We are grateful for research assistance from Anna Reimondos and Jani Turunen. The findings and views reported in this paper are those of the authors alone.

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**Table 1: Women's birth outcomes by parity, same or different partner**

| | Birth Outcomes (Per cent) | | | |
|---|---|---|---|---|
| | **Australia** | **USA** | **Norway** | **Sweden** |
| **After first birth** | | | | |
| no second birth | 23.0 | 28.6 | 20.4 | 23.9 |
| second birth same father | 62.9 | 50.2 | 67.8 | 67.9 |
| second birth different father | 14.1 | 21.2 | 11.8 | 8.2 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Pct second births with different father | 18.3 | 29.7 | 14.8 | 10.8 |
| Number of birth intervals | 2,856 | 3,842 | 77,316 | 1,159,574 |
| **After two births, same father** | | | | |
| no third birth | 54.8 | 52.7 | 59.6 | 66.3 |
| third birth same father | 40.6 | 42.1 | 35.2 | 28.9 |
| third birth different father | 4.6 | 5.2 | 5.1 | 4.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Pct third births with different father | 10.2 | 11.0 | 12.7 | 14.2 |
| Number of birth intervals | 1,796 | 1,548 | 51,754 | 778,390 |
| **After three births, same father** | | | | |
| no fourth birth | 67.5 | 63.4 | 76.1 | 78.1 |
| fourth birth, same father | 29.5 | 30.7 | 21.4 | 18.7 |
| fourth birth, different father | 3.0 | 5.9 | 2.5 | 3.2 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Pct fourth births with different father | 9.3 | 16.1 | 10.5 | 14.6 |
| Number of birth intervals | 729 | 566 | 18,012 | 222,499 |
| **After four births, same father** | | | | |
| no fifth birth | 69.8 | 62.1 | 74.4 | 75.9 |
| fifth birth, same father | 26.5 | 36.2 | 23.2 | 21.2 |
| fifth birth, different father | 3.7 | 1.7 | 2.4 | 2.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Pct fifth births with different father | 12.3 | 4.5 | 9.4 | 12.0 |
| Number of birth intervals | 215 | 160 | 4,926 | 41,209 |

Note: Women born 1952-1991 (USA 1961-1992), at least one child. USA estimates weighted, number unweighted.
Data Sources: Australia - HILDA (2008); USA - NSFG (2006-08); Sweden - STAR (2007); Norway - Registers (2007)

**Table 2: Fixed Covariates & Period of Observation, All Mothers**

| | Australia | USA | Norway | Sweden |
|---|---|---|---|---|
| **Mother's age at 1st birth** | | | | |
| under 20 years | 14.6 | 30.7 | 11.7 | 7.4 |
| 20-25 years | 30.9 | 34.7 | 46.4 | 33.2 |
| 26-29 years | 31.6 | 21.9 | 25.2 | 35.8 |
| 30 years or older | 23.0 | 12.9 | 16.8 | 23.7 |
| **1st birth marital status** | | | | |
| Married | 72.8 | 56.0 | 52.5 | 30.4 |
| not married | 27.2 | 44.0 | 38.9 | 69.6 |
| Unknown | 0.0 | 0.0 | 8.6 | 0.0 |
| **Prior marriage** | | | | |
| No | 94.2 | 95.4 | 98.2 | 98.2 |
| Yes | 3.9 | 4.6 | 1.8 | 1.8 |
| Unknown | 1.9 | 0.0 | 0.0 | 0.0 |
| **Immigrant[1]** | | | | |
| native born | 79.2 | 80.9 | 85.6 | 94.8 |
| group 1 | 8.3 | 19.1 | 2.7 | 2.0 |
| group 2 | 12.5 | na | 2.4 | 0.4 |
| group 3 | na | na | 9.3 | 2.7 |
| Unknown | 0.0 | 0.0 | 0.0 | 0.1 |
| **Education** | | | | |
| Compulsory | 28.8 | 19.3 | 23.6 | 10.1 |
| Secondary | 35.6 | 55.4 | 39.5 | 55.6 |
| Tertiary | 35.6 | 25.3 | 30.7 | 32.4 |
| Unknown | 0.0 | 0.0 | 6.2 | 1.9 |
| **Mother's education** | | | | |
| Compulsory | 47.5 | 30.3 | 39.9 | 55.7 |
| Secondary | 11.5 | 53.7 | 36.6 | 30.6 |
| Tertiary | 30.8 | 14.7 | 7.0 | 11.3 |
| Unknown | 10.2 | 1.2 | 16.6 | 2.4 |
| **Decade interval start[2]** | | | | |
| < 1980 | 10.4 | 0.0 | 15.5 | 9.6 |
| 1980s | 35.3 | 18.8 | 31.1 | 29.3 |
| 1990s | 40.0 | 56.4 | 36.8 | 35.4 |
| 2000+ | 14.3 | 24.9 | 16.6 | 25.7 |
| **Number of mothers** | 2,856 | 3,842 | 77,316 | 1,159,574 |
| **Number of intervals** | 5,561 | 6,116 | 152,008 | 2,201,672 |

Notes: Women born 1952-1991 (USA 1961-1992), at least one child. USA estimates weighted, number unweighted.
Data Sources: Australia - HILDA (2008); USA - NSFG (2006-08); Sweden - STAR (2007); Norway - Registers (2007)

[1]Immigrant groups-
Australia: group 1 English-speaking countries, group 2 non English-speaking countries
USA: group 1 all immigrants
Norway/Sweden: group 1 Nordic countries, group 2 Western Europe, U.S., Canada, Australia New Zealand; group 3 all other countries
[2]USA 1980s includes 1974-1989

**Table 3: Differentials and Change in Childbearing across Partnerships**

| | Relative Risk Ratio, Birth with Same, Different Partner vs. No Birth | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Australia | | USA | | Norway | | Sweden | |
| | Same | Different | Same | Different | Same | Different | Same | Different |
| **Parity (same father)** | | | | | | | | |
| one child | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| two children | 0.39* | 0.17* | 0.61* | 0.19* | 0.33* | 0.18* | 0.22* | 0.20* |
| three children | 0.25* | 0.06* | 0.37* | 0.17* | 0.18* | 0.06* | 0.13* | 0.09* |
| four children | 0.23* | 0.06* | 0.48* | 0.04* | 0.22* | 0.07* | 0.15* | 0.06* |
| **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 | 1.35* | 0.53* | 1.15* | 0.40* | 1.16* | 0.49* | 1.19* | 0.51* |
| 26-29 years | 1.31* | 0.14* | 1.34* | 0.16* | 1.22* | 0.19* | 1.17* | 0.17* |
| 30 years or older | 0.99 | 0.11* | 0.91* | 0.06* | 0.96 | 0.07* | 0.87* | 0.05* |
| **Prior marriage < 1st birth** | | | | | | | | |
| no | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| yes | 1.11 | 1.04 | 0.91 | 1.69* | 0.74* | 1.59* | 0.74* | 1.70* |
| unknown | 0.99 | 0.78 | na | na | na | na | Na | Na |
| **Immigrant[1]** | | | | | | | | |
| native born | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| group 1 | 0.88 | 0.77 | 1.17* | 0.59* | 1.07* | 0.94 | 0.88* | 1.01 |
| group 2 | 0.77* | 0.35* | na | na | 1.18* | 0.99 | 0.99 | 0.89 |
| group 3 | na | na | na | na | 1.40* | 0.80* | 1.03* | 0.80* |
| unknown | na | na | na | na | 0.47 | 0.00 | 1.66* | 1.28 |
| **Education** | | | | | | | | |
| compulsory | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| secondary | 0.96 | 0.96 | 0.72* | 0.70* | 1.05* | 0.79* | 1.15* | 0.87* |
| tertiary | 1.11* | 0.74* | 0.94 | 0.37* | 1.28* | 0.74* | 1.42* | 0.74* |
| Unknown | na | na | na | na | 1.17* | 0.84* | 0.65* | 0.50* |
| **Mother's education** | | | | | | | | |
| compulsory | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| secondary | 0.93 | 1.14 | 0.89* | 0.95 | 1.10* | 1.03* | 1.04* | 1.27* |
| tertiary | 1.01 | 1.12 | 1.01 | 0.84 | 1.24* | 1.24* | 1.16* | 1.34* |
| unknown | 0.95 | 1.52* | 0.62* | 0.94 | 0.98 | 0.93 | 1.03* | 0.94* |
| **Decade interval start[2]** | | | | | | | | |
| < 1980 | 1.00 | 1.00 | na | na | 1.00 | 1.00 | 1.00 | 1.00 |
| 1980s | 0.86* | 1.33* | 1.00 | 1.00 | 0.94 | 1.53* | 1.26* | 1.39* |
| 1990s | 0.69* | 1.89* | 0.81* | 1.05 | 0.79* | 3.09* | 0.99 | 1.42* |
| 2000+ | 0.62* | 1.63* | 0.75* | 0.90 | 0.93 | 3.82* | 1.03* | 1.75* |
| **Log-Likelihood** | -9847.0 | | -13467.7 | | -291586.6 | | -3766253.5 | |
| df | 42 | | 34 | | 44 | | 44 | |

| | | | | | |
|---|---|---|---|---|---|
| **Mothers** | 2,856 | 3,842 | 77,316 | 77,316 | 1,159,574 |
| **Birth intervals** | 5,561 | 6,116 | 152,008 | 152,008 | 2,201,672 |
| **Annual Observations** | 31,742 | 29,981 | 1,119,067 | | 15,190,734 |

*p<0.05 USA and Australia, 0.001 Sweden and Norway.

Notes: Women born 1952-1991 (USA 1961-1992), at least one child. USA estimates weighted, number unweighted.

Data Sources: Australia - HILDA (2008); USA - NSFG (2006-08); Sweden - STAR (2007); Norway - Registers (2007)

[1]Immigrant groups-

Australia: group 1 English-speaking countries, group 2 non English-speaking countries

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[2]USA 1980s includes 1974-1989