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

DEMOGRAPHIC RESEARCH

VOLUME 28, ARTICLE 14, PAGES 409-420
PUBLISHED 27 FEBRUARY 2013
http://www.demographic-research.org/Volumes/Vol28/14/
DOI: 10.4054/DemRes.2013.28.14

Descriptive Finding

Recent fertility patterns of Finnish women by union status: A descriptive account

Jan M. Hoem

Marika Jalovaara

Cornelia Mureşan

Table of Contents

Recent fertility patterns of Finnish women by union status: A descriptive account[1]

Jan M. Hoem[2]

Marika Jalovaara[3]

Cornelia Mureşan[4]

Abstract

BACKGROUND AND OBJECTIVE
Remarkably little is known about the significance of consensual unions for fertility. This is true everywhere, but the lacuna is more important in the Nordic countries where there is so much childbearing outside of marriage, mostly in consensual unions. The purpose of this paper is to help fill this hole in our knowledge for Finland.

DATA
Unusually good register data enable us to study recent fertility trends by union status (married, cohabiting, neither) using records for some 112,000 Finnish women, or 11% of all women at fertile ages.

METHODS
Our description of fertility is based on group-specific duration-based TFRs, which is the number of children borne by a woman who remains in the group throughout her reproductive life, as computed from the fertility rates for a synthetic cohort. This is an intuitively appealing metric that has been taken into systematic use only recently.

[1] All authors have contributed equally to this paper.
[2] Max Planck Institute for Demographic Research, Rostock, Germany, and Demography Unit, Department of Sociology, Stockholm University, Sweden. E-mail: Hoem@demogr.mpg.de.
[3] Department of Social Research, University of Turku, Finland.
[4] Babeş-Bolyai University, Faculty of Sociology and Social Work, and Centre for Population Studies, Cluj Napoca, Romania.

RESULTS
We find substantial fertility differences between women who cohabit, women who marry directly (i.e., without pre-marital cohabitation), and women who marry their cohabitational partner. As one would also expect in Finland, cohabiting women have much lower fertility than married women. The marital TFR is highest among the directly-married and declines monotonically as the length of pre-marital cohabitation increases, even when premarital childbearing is included in the count. As far as we know the latter relationship has not been shown before, because extensive data for complete cohabitational unions have not been available for other populations.

CONCLUSIONS
The Finnish data are unique, even among the Nordic countries, in that they contain individual-level life histories of family dynamics that cover consensual unions from their very start. Fertility analysis would benefit if data similar to the Finnish were to become available, because analyses that rely on civil status as an indicator of union status barely add anything to what we already know about today"s family dynamics.

1. Introduction

The purpose of this paper is to provide a compact description of recent fertility patterns for Finnish women in both consensual and marital unions. While marital fertility is known for many countries, as far as we know this is the first time that a corresponding description has been made systematically available for cohabiting women from the start of cohabitation. Official statistics usually provide items like the share of non-marital births (among all live births), but they do not give a sufficiently complete account of fertility in unions or in marriages. Non-marital births can be to women outside a union (really-single women) or to cohabiting (non-married) women. Similarly, statistics of births in marriage do not distinguish between the fertility of the various groups of married women who have cohabited before marriage. As this study will show, distinguishing between these groups can provide much further insight into fertility patterns and into the roles of cohabitation and marriage in family formation.

2. Methodology

For the present study we have used union histories and childbearing histories for an 11% sample of all Finnish women at childbearing ages, based on population registers maintained by Statistics Finland. Cohabitational histories have been constructed from recorded continuous individual careers of domicile in dwelling units, defined as individual apartments and detached houses, which allows one to infer who lives with whom during any period covered by the data. (For international migrants one can also get the complete in- and out-migration dynamics, but we have only used that information to censor at out-migration.) All data have been organized in the Palapeli sample database, which used to be maintained at Helsinki University.

Data of this nature are perfect for event-history analysis, and they have been used with such an approach to study union formation and dissolution (Mäenpää 2009; Mäenpää and Jalovaara 2011, in press; Jalovaara 2012a, 2012b), and for aspects of fertility analysis (Jalovaara and Miettinen 2012). Event-history analysis is the instrument of choice for a detailed analysis, but for a general overview of the pattern of consensual and marital fertility it has the disadvantage that it easily involves the analyst in a needlessly complex description of partnership transitions. To avoid such complexity we have chosen a different and simpler approach using duration-based TFRs, defined as follows.

For each type of union and each calendar year we have computed occurrences and exposures of birth for each interval of duration since the formation of the cohabitation or marriage, and have aggregated them across calendar years when suitable. In our data aggregation over the three-year period 2001–2003 has turned out to be justified, as explained below. We have then computed conventional occurrence/exposure rates for the combined period and have calculated a duration-based TFR by accumulating the period rates over all durations in a manner similar to the usual age-based TFR, which is computed as a sum over all ages. With a synthetic cohort approach, the duration-based total fertility rate for married women estimates the number of children that would be borne by a woman who remained married throughout her reproductive life and had children at the rates used in the calculation. The corresponding TFR for cohabiting women estimates the number of children born by a woman who instead lives in a consensual union throughout her fertile years. For women whose cohabitational union is, for example, converted into a marriage in the third year of the union, the combined-union TFR is obtained by accumulating the TFRs for the first two (consensual) years of the union, half the TFR for the third year of the consensual union (on the standard assumption that on average the consensual union is converted into a marriage half-way into the third year of the union), and the total TFR in marriage for a union that is converted in its third year. If an individual moves from one union to the next, the

process starts over again at the beginning of the new union. For women who have never entered a union, an occurrence/exposure rate is computed for each year of age starting at age 15, and the rates are added up over ages as if their status were a type of union with a duration counted since they reached age 15. Real-union formation ends the single status and is handled in the manner just described for union conversion. The status of women who have left a union is handled as a separate state with a duration starting at the end of the last previous union until possible entry into a new union.

All in all, our procedure reflects the notion that union status is a time-varying covariate for which status-dependent fertility rates are computed and added up for the individual career across the statuses of the covariate, with the state space extended to cover women who do not currently live in unions. Just as the age-based total fertility rate is normally computed without regard to parity attained, we do the same for the duration-based TFR.

The use of duration-based TFRs is inspired by the technique of parity-progression ratios that goes back to the early 1950s (Ryder, 1951; Henry, 1951) and that has been found useful by many subsequent authors. Duration-specific rates and their sums were pervasive in the work around the World Fertility Survey; see, e.g., Rodriguez and Hobcraft (1980), Hobcraft et al. (1982), and Hobcraft and Casterline (1983). The same notions have been utilized subsequently by many authors, such as Blayo (1986), Rallu (1986), Ní Bhrolcháin (1987), Feeney and Yu (1987), and Murphy and Berrington (1993), and again recently by Breton and Prioux (2005), Barkalov (1999, 2005), and Hosseini-Chavoshi et al. (2006), and surely by many more. The methodology has recently been formalized and developed further by Hoem and Mureşan (2011a, b) and by Hoem et al. (in press).

By means of hazard regression the duration-based TFR technique can easily be extended to include indirect standardization with respect to any variable in the data, but for simplicity we have mostly avoided the use of standardization in this paper. The only exception is in our study of the effect of union order (Figure 3), where we wanted to control for age and parity at the start of the current union. To achieve such control we have run a hazard regression with age and parity at union formation as fixed covariates and with union order (first vs. later unions) in interaction with union duration (our process time). For starting parity 0 and starting age group 20-24 we have subsequently added up the estimated rates over duration in the current union for each union-order group separately. This procedure amounts to an indirect standardization with respect to age group and parity at union formation. Trial calculations have shown that our main results are robust against (indirect) standardization with respect to other covariates in our data, i.e., it does not much matter whether one standardizes with respect to them or not.

3. Data

We have worked with the records for an extract of (actually) 111,871 women at fertile ages from the Palapeli database. From the extract we have eliminated 1,118 records (about 1%) of women whose union histories contained irregularities like overlapping unions or union dissolution before union formation. In our experience this is an unusually small share of problematic records in any data set.

A co-residential union is defined as a male and a female registered as domiciled in the same dwelling unit for over 90 days, provided (i) that the female partner was at least 18 years old at the end of the year, (ii) that the partners were not close relatives (e.g., siblings or parent and child), (iii) that their age difference was no more than 20 years, or (iv) that they had a common child. Scandinavian population registers are known for their extensive individual-level data, but as far as we know the Palapeli database is the first to make use of continuous register-based histories of co-residential unions, including childless periods in cohabitational unions. As usual, the co-residential union is regarded as consensual until the couple marries, and of course as marital thereafter.

The Finnish dwelling-unit histories start in 1987, which therefore is the year from which we have been able to use histories of new consensual unions. It has turned out that we need some 15 duration years to compute a valid complete duration-based TFR: after 15 years there is too much random variation in the occurrence/exposure rates to make them useful for our computations. In practice, therefore, our data extract, which was made through 2003, contains life histories for individuals in the register data in 2001, 2002, or 2003. We have not found any essential changes in fertility behavior over this brief period of three years and for all practical purposes have treated it as homogeneous, i.e., without any trends of interest. There were no major changes in public policies over these years that might motivate any attempt at discovering effects of policy changes. We have therefore aggregated the data over the three years.

The need for such a long backward horizon is perhaps the weakest aspect of the duration-based TFR technique. It shares this problem with any cohort analysis, even though our use of the TFR technique makes use of hypothetical rather than real cohorts and relies on a much shorter backward horizon than the analysis of real cohorts needs.

We have right-censored all records at age 45, at death, or at date of first emigration. We have also right-censored the records as of 30 September 2003, in order to respect the rule of a minimum of three months of co-residence to record a consensual union.

4. Findings

4.1 Total fertility rates by union status

Figure 1 displays the complete-union TFR for women in a consensual union, and the marital-union TFR for married women by duration of premarital cohabitation. ("Married 1st y" means that the woman married in the first year of a consensual union; the other groups on the *x*-axis have similar interpretations.) The duration-based TFR is 1.12 for women in a consensual union and 1.88 for the directly-married, i.e., for women who married without first living with the spouse in cohabitation. The leftmost point in Figure 1 represents a TFR as low as 0.17 for women who have never lived in a co-residential union. To avoid needless detail we have omitted the small TFRs for previously partnered women, i.e., for women who have left one partnership and not (yet) entered a new one.

For married women with premarital cohabitation the marital TFR declines monotonically as the length of premarital cohabitation becomes longer. These marital TFRs count births in marriage only. When we add the TFRs for premarital births, as in Figure 2, we see that such births partly (but not completely) compensate for what was lost in the count for marital unions in Figure 1. [Figure 2 uses the actual length of premarital cohabitation in each group along the x-axis (interval mid-points) while Figure 1 uses length categories to fit with the complete TFR for consensual unions.] Note how the complete TFR remains roughly constant (at a little above 1.8) for the first five years‟ duration of pre-marital cohabitation, and only then starts to decline slowly.

Figure 1: TFRs by union status. For marital unions by duration of premarital cohabitation. Finland, 2001–2003

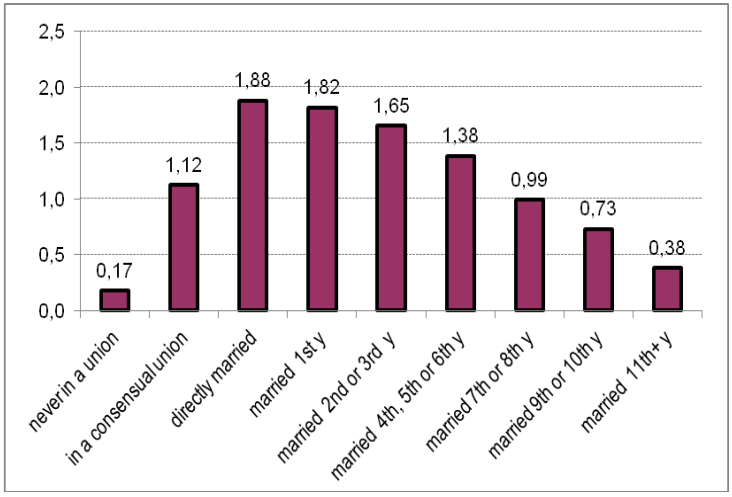
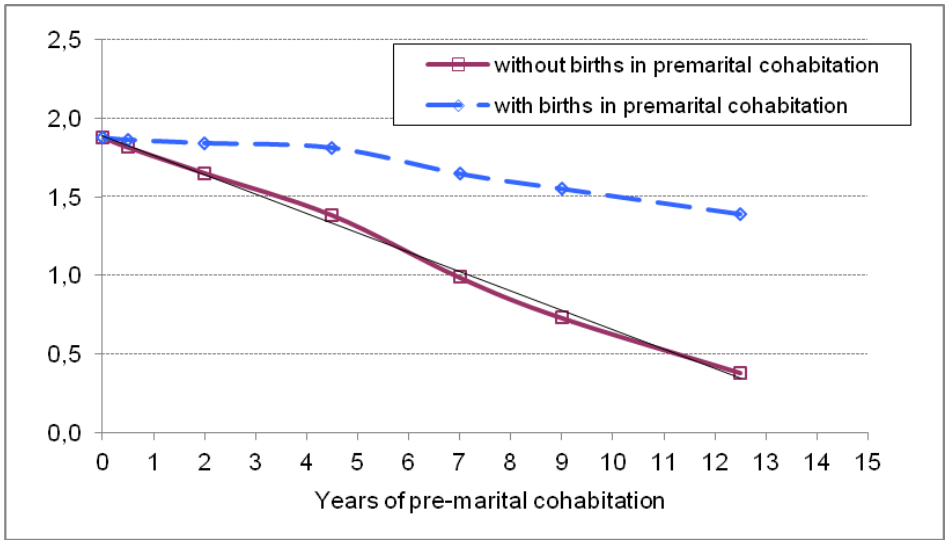


Figure 2: TFRs for women in marital unions with and without consideration of premarital births. Finland, 2001–2003



4.2 First and later unions

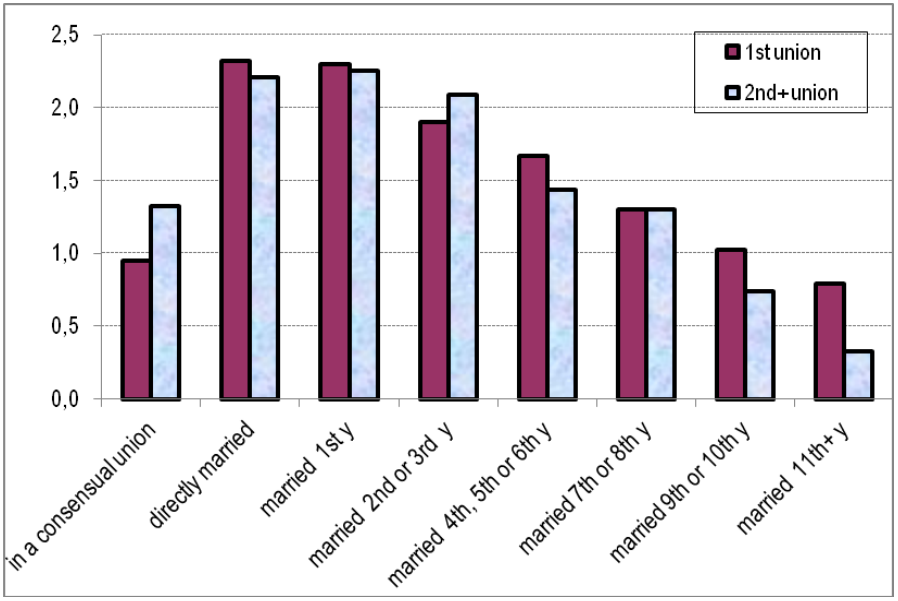
A priori we would expect fertility in first and in later unions to be slightly different from each other. This would partly reflect the possibility that women in later unions tend to be somewhat older and more likely to have children already: first unions were entered mostly in the age group 20-24 years (45% of exposure time), and almost all such women were childless at the start of the union (91% of exposure time). For later unions the most comon age group at entry was 25-29 (33% of exposure time) and only two out of three women were childess (60% of exposure time) or with one child (18% of exposure time) or two children (15% of exposure time) at union formation.[5] To get a „fair" comparison across union orders, we therefore standardize for age and parity at union formation. As we see from Figure 3, however, with such standardization there is no essential difference in the TFRs between women in first and later unions, except possibly that women cohabiting in first unions have even lower fertility than women cohabiting in later unions. (See the leftmost pair of columns in Figure 3.) In the other analyses of this paper we have ignored union order and starting parity and age.

5. Discussion

In general, our findings show that it is not enough to distinguish between marital and non-marital fertility, as is normally done in official statistics. First of all, the very low fertility among women who do not live in a union reflects the Nordic feature that really single childbearing is very rare: non-marital childbearing is largely confined to cohabitational unions. Second, Finnish fertility in consensual unions is much lower than in marriage, and for marital fertility it is important to account properly for marriage duration and union duration. It is interesting to see that the directly-married have the highest fertility of all our groups, even somewhat higher than women who marry during their first year of cohabitation. It seems that important selectivity mechanisms are involved in the transitions between partnership forms and durations. Additionally, actual effects of getting and being married might also be involved, such as stronger social expectations of childbearing, or a greater trust in the durability of the union. Given that entry into second and later unions ought to be somewhat selective in the present study population as well, we find it intriguing that there should be so little fertility difference between first and later unions, except that, in cohabitation, fertility is even higher in later unions.

[5] Interestingly, there are no striking differences between the distribution of exposure time at the start of consensual unions and at direct-marriage formation, only between first and higher order unions regardless of union type.

Figure 3: TFRs for women in first and later unions, with marital unions subdivided according to duration of premarital cohabitation. Standardized. Pre-marital fertility not included. Finland 2001−2003



Note: The items in this diagram have been standardized with respect to parity and age at union formation. The designations along the *x*-axis are to marriages formed in the first year of co-habitation, 2nd and 3rd year of co-habitation, and so on.

6. Acknowledgements

We are grateful for economic support to Cornelia Mureşan from the Max Planck Society and from the Romanian National Authority for Scientific Research, CNCS–UEFISCDI (project number PN-II-ID-PCE-2011-3-0145), and to Marika Jalovaara from the Academy of Finland (decision number 138208). We also thank the Department of Social Research at the University of Helsinki for office space to Cornelia Mureşan and the Demography Unit at Stockholm University for office space to Jan Hoem. We thank Statistics Finland for permissions number TK53-747-05 and TK53-643-11 to use the data. Elina Mäenpää and Gerda Neyer have given very useful comments on earlier versions of this paper. Insightful comments from the journal"s referees have also been very helpful. We are grateful to a referee for helping us map the literature on parity-progression ratios.

References

Barkalov, N.B. (2005). Changes in the quantum of Russian fertility during the 1980s and early 1990s. *Population and Development Review* 31(3): 545-556. doi:10.1111/j.1728-4457.2005.00084.x.

Barkalov, N.B. (1999). The fertility decline in Russia, 1989-1996: A view with period parity-progression ratios. *Genus* 55(3-4): 11-60.

Blayo, C. (1986). La constitution de la famille en France depuis 1946. *Population* (French Edition) 41(4-5): 721-747. doi:10.2307/1533020.

Breton, D., and Prioux, F. (2005). Two children or three? Influence of family policy and socio-demographic factors. *Population – English Edition* 60(4): 415-445.

Feeney, G., and Yu, J. (1987). Period parity progression measures of fertility in China. *Population Studies* 41(1): 77-102. doi:10.1080/0032472031000142546.

Henry, L. (1951). Étude statistique de l'espacement des naissances. *Population* (French Edition) 6(3): 425-444. doi:10.2307/1523956.

Hobcraft, J.N., Goldman, N., and Chidambaram, V.C. (1982). Advances in the P/F ratio method for the analysis of birth histories. *Population Studies* 36(2): 291-316.

Hobcraft, J.N., and Casterline, J.B. (1983). Speed of reproduction. Word Fertility Survey Comparative Studies 25. Voorburg, The Netherlands: International Statistical Institute (ISI).

Hoem, J.M., and Mureşan, C. (2011a). The total marital fertility rate and its extensions. *European Journal of Population* 27(4): 295-312. doi:10.1007/s10680-011-9237-y.

Hoem, J.M. and Mureşan, C. (2011b). The role of consensual unions in Romanian total fertility. Stockholm Research Reports in Demography. 16. Stockholm: University of Stockholm.

Hoem, J.M., Mureşan, C., and Hărăguş, M. (in press). Recent trends in total cohabitational fertility in Romania. *Population – English edition.*

Hosseini-Chavoshi, M., McDonald, P., and Abbasi-Shavazi, M.J. (2006). The Iranian fertility decline, 1981-1999: An application of the synthetic parity progression ratio method. *Population – English Edition* 61(5-6): 701-718.doi:10.3917/pope.605.0701.

Jalovaara, M. (2012a). Socio-economic resources and first-union formation in Finland, cohorts born 1969-81. *Population Studies* 66(1): 69-85. doi:10.1080/00324728.2011.641720.

Jalovaara, M. (2012b). Socioeconomic resources and the dissolution of cohabitations and marriages. *European Journal of Population*. Published Online First. doi:10.1007/s10680-012-9280-3.

Jalovaara, M., and Miettinen, A. (2012). Does his paycheck also matter? The socioeconomic resources of co-residential partners and entry into parenthood. Stockholm Research Reports in Demography. 10. Stockholm: University of Stockholm.

Mäenpää, E. (2009). Cohabiting partners‟ socioeconomic characteristics and the transition to marriage in Finland. *Finnish Yearbook of Population Research* 44: 63-77.

Mäenpää, E., and Jalovaara, M. (2011). The effects of homogamy in socio-economic background and education on union dissolution: Divergent effects in cohabitations and marriages? Stockholm Research Reports in Demography. 18. Stockholm: University of Stockholm.

Mäenpää, E., and Jalovaara, M. (in press). The effects of homogamy in socio-economic background and education on the transition from cohabitation to marriage. *Acta Sociologica*.

Mureşan, C., and Hoem, J.M. (2010). The negative educational gradients in Romanian fertility. *Demographic Research* 22(4): 95-114. doi:10.4054/DemRes.2010.22.4.

Murphy, M., and Berrington, A. (1993). Constructing period parity progression ratios from household survey data. In: Ní Bhrolcháin, M. (Ed.). *New Perspectives on Fertility in Britain*. London: Her Majesty‟s Stationery Office: pp. 17-33.

Ní Bhrolcháin, M. (1987). Period parity progression ratios and birth intervals in England and Wales, 1941-1971: A synthetic life table analysis. *Population Studies* 41(1): 103-125. doi:10.1080/0032472031000142556.

Rallu, J.-L. (1986). Descendance des générations françaises et probabilités d‟agrandissement. *Population* (French Edition) 41(4-5): 763-802. doi:10.2307/1533022.

Ryder, N.B. (1951). The Cohort Approach: Essays in the measurement of temporal variations in demographic behavior. [PhD Thesis]. New York 1980: Princeton University.