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

DEMOGRAPHIC RESEARCH

VOLUME 49, ARTICLE 16, PAGES 423–464
PUBLISHED 1 SEPTEMBER 2023
https://www.demographic-research.org/Volumes/Vol49/16/
DOI: 10.4054/DemRes.2023.49.16

Research Article

An alternative version of the second demographic transition? Changing pathways to first marriage in Japan

Ryohei Mogi

James Raymo

Miho Iwasawa

Shohei Yoda

Contents

Demographic Research: Volume 49, Article 16
Research Article

An alternative version of the second demographic transition? Changing pathways to first marriage in Japan

Ryohei Mogi[1]

James Raymo[2]

Miho Iwasawa[3]

Shohei Yoda[3]

Abstract

BACKGROUND
Growth in cohabiting unions and non-marital childbearing sits at the core of research on the second demographic transition and related discussions of family bifurcation and children's diverging destinies.

OBJECTIVE
How should we think about these two highly influential and purportedly universal depictions of family change in low-fertility countries where the link between marriage and childbearing remains strong? Using data from large national surveys in Japan, we address this question by describing growing heterogeneity in pathways to first marriage, with a focus on the temporal ordering of cohabitation, pregnancy, engagement, initiation of living together as married, and registration of marriage.

RESULTS
Our descriptive analyses demonstrate a substantial increase across marriage cohorts in variation in pathways to family formation in Japan, primarily reflecting growth in premarital cohabitation. Among women in the 2010–2015 marriage cohort, 39% cohabited with their husband prior to marriage. Educational differences in cohabitation experience are small, but cohabitation is more likely to be associated with premarital pregnancy for women with lower levels of educational attainment.

[1] Interdisciplinary Centre on Population Dynamics (CPop), University of Southern Denmark, Denmark. Email: rymo@sdu.dk.
[2] Department of Sociology and Office of Population Research, Princeton University, Princeton NJ, USA.
[3] Department of Population Dynamics Research, National Institute of Population and Social Security Research, Tokyo, Japan.

CONTRIBUTION

Our descriptive summary of trends and differences in pathways to first marriage provides not only a needed update on changing pathways to family formation in Japan, but also a valuable empirical basis for contextual modification or adaptation of two of the most influential theoretical frameworks for understanding family change in low-fertility societies.

1. Introduction

The second demographic transition (SDT) provides a framework for understanding the growing heterogeneity in family formation pathways that has accompanied sustained below-replacement fertility in many wealthy countries over the past 50 years. The SDT framework encompasses a wide range of family changes, but the decoupling of marriage and childbearing sits at its core. Of particular importance is the rise in non-marital cohabiting unions as either a prelude or an alternative to marriage, and especially as a context for childbearing. Articulations of the SDT typically posit that all low-fertility countries are moving in the same general direction – away from a relatively homogenous family life course in which marriage and childbearing are tightly linked. This pattern of change has been referred to as a "de-standardization of family-life trajectories" (Elzinga and Liefbroer 2007).

Findings from the large body of research on trends in family formation in low-fertility countries are generally consistent with these basic expectations of the SDT (Lesthaeghe 2010, 2020). The pace and nature of change vary across societies, but most have experienced a decoupling of marriage and fertility, with cohabiting unions emerging as an increasingly common context for childbearing (Perelli-Harris et al. 2010). There are, however, a small number of striking exceptions to this general pattern, especially in East Asia where levels of non-marital childbearing remain negligible. Recent data show that the percentage of children born to unmarried women is no more than 2% in Japan and Korea (Raymo et al. 2015) and only 4% in Taiwan (OECD 2021b). In China the figure has been around 6% in recent years, but in most cases these couples marry shortly after the non-marital birth (Yu and Xie 2021). Considering that many other key features of the SDT are clearly visible in these societies (e.g., declining marriage, increasing divorce, and changing family attitudes), the continued strength of the link between marriage and childbearing is of profound substantive and theoretical interest.

Emphasis on exceptionally low levels of non-marital childbearing has tended to obscure the fact that cohabitation is an increasingly common part of the family formation process in these societies (Raymo, Iwasawa and Bumpass 2009; Yu and Xie 2015). The

same is true of premarital pregnancy (Chang 1996; Kim 2017; Ma and Rizzi 2017; National Institute of Population and Social Security Research, IPSS hereafter, 2022). Together, these trends in premarital cohabitation and pregnancy suggest the possibility of a distinctive East Asian pattern of the SDT in which pathways to first marriage and to parenthood within marriage change in ways that are generally consistent with predictions of the framework, but marriage remains the only acceptable setting for childbearing.

Efforts to understand the causes and consequences of increasingly heterogeneous family formation pathways have paid particular attention to socioeconomic differentials and their change over time. In conventional articulations of the SDT framework, theoretical emphases on the role of secularization and self-actualization suggest that cohabitation, non-marital childbearing, and other new forms of family behavior emerge first among highly educated innovators before gaining normative acceptance and spreading more widely throughout the population (Lesthaeghe and Neels 2002; Ní Bhrolcháin and Beaujouan 2013; Perelli-Harris and Lyons-Amos 2016). Another related body of research on growing socioeconomic differences in family formation pathways emphasizes a pattern of disadvantage in which the decoupling of marriage and childbearing is increasingly concentrated at the lower end of the socioeconomic distribution (Cherlin 2004; Perelli-Harris and Gerber 2011), with implications for the "diverging destinies" of children born to higher- and lower-educated parents (McLanahan 2004).

Articulations of the diverging destinies framework position socioeconomic bifurcation in family behavior as a universal feature of the second demographic transition (McLanahan 2004). Cross-national research has documented a good deal of variation, with a negative gradient in non-marital childbearing typically more pronounced in societies characterized by greater inequality and more limited public support for families (Perelli-Harris et al. 2010; Perelli-Harris and Lyons-Amos 2016), but trends in socioeconomic differentials are generally consistent with expectations (McLanahan and Jacobsen 2015). However, it is not clear how we should understand relationships between family change and inequality in the small number of low-fertility countries where the link between marriage and childbearing remains strong. For example, how should we understand the small negative educational gradient in cohabitation experience in Japan (Iwasawa 2005; Raymo, Iwasawa and Bumpass 2009; Tsuya 2006), given that almost none of these unions result in a non-marital birth?

This seeming mismatch between broad, widely referenced theories of family change and limited evidence of such change in Japan (and other East Asian societies) has resulted in a striking scarcity of research on the SDT and patterns of diverging destinies in these societies. The small body of research explicitly linking low-fertility, family change, and inequality to the SDT and diverging destinies in Japan includes papers by Atoh (2001, 2008), Atoh, Kandiah, and Ivanov (2004), Brinton (2008; 2020), Ochiai (2014), Raymo

(2022), and Raymo and Iwasawa (2016). While limited scholarly attention to the SDT and patterns of diverging destinies in Japan is understandable in the absence of evidence of a decoupling of marriage and childbearing, we view this as a missed opportunity. Largely ignoring broad theoretical frameworks of posited universal relevance in favor of context-specific explanations strikes us as a particularly unproductive approach. Rather, we see value in treating the continued link between marriage and childbearing as a distinctive feature of a subset of low-fertility societies that can, and should, be integrated into broad theoretical frameworks for understanding family change. Not only do China, Japan, Korea, and Taiwan have very low levels of fertility, they are also characterized by relatively high levels of income inequality and poverty (OECD 2021a) and low levels of public support for families (OECD 2021b), both of which are clearly relevant to understanding the interplay between family change and inequality central to the diverging destinies framework.

Our goal in this paper is to begin addressing this gap in the literature by examining recent data on Japan to (1) describe how pathways to first marriage have changed across marriage cohorts and (2) examine differences by educational attainment in pathways to first marriage.[4] In the process of addressing these two goals, we seek a better understanding of the meaning of premarital cohabitation and premarital pregnancy by using information on the timing of engagement, initiation of married life (when couples begin living together as married), pregnancy, and marriage registration. To what degree does a historically homogeneous family life course and maintenance of a strong link between marriage and childbearing obscure growing heterogeneity in the nature and meaning of pathways to first marriage and parenthood in Japan? What do the newest data on pathways to family formation, and socioeconomic differentials therein, suggest about the nature of the SDT and patterns of diverging destinies in Japan? Answers to these questions will provide not only a needed update on changing pathways to family formation in Japan, but also a valuable empirical basis for contextual modification or adaptation of two of the most influential theoretical frameworks for understanding family change in low-fertility societies.

2. Background

2.1 The second demographic transition and diverging destinies

The second demographic transition is the most widely referenced and well-articulated framework for describing and understanding the emergence and persistence of below-

[4] Below, we discuss the rationale for our decision to focus on marriage cohorts rather than birth cohorts.

replacement fertility. The SDT framework focuses on understanding low fertility in the context of a broad array of family demographic changes, including later marriage, delayed childbearing, childlessness, increases in the proportion who never marry and substantial increases in non-marital cohabitation, non-marital fertility, maternal employment, and divorce (Lesthaeghe 1995, 2010, 2020; van de Kaa 1987). Within this array of family changes linked to the SDT, particular attention has been paid to the emergence of non-marital cohabiting unions as a (temporary) alternative to marriage and a locus for childbearing (e.g., Raley 2001).

In the United States, for example, non-marital cohabitation rapidly evolved from a rare and stigmatized arrangement to a common component of the family formation process. The percentage of newlyweds who cohabited prior to marriage was 11% for the 1965–1974 marriage cohort but rose to 66% for the 2005–2009 marriage cohort (Manning 2013), and the percentage of 29–31-year-old women who reported cohabitation experience rose from 42% in 1988 to 74% in 2013 (Manning 2020). A good deal of research has sought to understand the meaning of cohabitation, its role in the family formation process, and how it varies across societies and subpopulations. For example, several studies have sought to evaluate the degree to which cohabitation should be seen as a prelude to marriage, a trial marriage, an alternative to marriage (i.e., something akin to common-law marriage), or simply as an alternative to dating (Heuveline and Timberlake 2004; Hiekel and Castro-Martín 2014). Other studies have examined cross-national differences in individual perceptions and legal treatment of cohabitating unions vis-à-vis marriage (Hiekel, Liefbroer, and Poortman 2014; Perelli-Harris and Gassen 2012).

Research on the SDT has long focused on understanding socioeconomic differences in family change. Building on insights from historical fertility decline, early depictions of the SDT emphasized the role of ideational change among highly educated innovators at the forefront of family change. In this conventional articulation, innovative family behaviors first emerged among those for whom the social and economic costs of those behaviors were lowest, before diffusing throughout the population. Subsequent research describes a more complex pattern of change, providing evidence that cohabitation and non-marital childbearing emerged and spread more rapidly among lower-SES groups in many countries. This pattern has been referred to as a pattern of disadvantage and has been contrasted with conventional articulations of the SDT (Perelli-Harris and Gerber 2011; Perellli-Harris et al. 2010).

Attention to rapid family change among the more disadvantaged has been particularly pronounced in the United States, where it is clear that many family behaviors associated with the SDT, including non-marital unions and non-marital childbearing, have spread most rapidly and broadly at the lower end of the socioeconomic spectrum (McLanahan 2004). Of particular importance in research on the United States is evidence

that growth in SDT behaviors linked to less favorable outcomes for children (e.g., non-marital childbearing, divorce) has been particularly pronounced among the less-educated, whereas those linked to better child outcomes (e.g., delayed childbearing) are increasingly concentrated among more-educated mothers. This pattern of family bifurcation has been described as a pattern of "diverging destinies" and linked to trends in socioeconomic inequality within and across generations (McLanahan 2004; McLanahan and Jacobsen 2015). Explanations for this pattern of bifurcation have emphasized socioeconomic differences in economic insecurity and public support, gender attitudes, birth control efficacy (McLanahan 2004), and the role of marriage as vehicle for investment in children (Lundberg and Pollak 2015; Lundberg, Pollak, and Stearns 2016).

Importantly, the SDT and patterns of diverging destinies are posited to be of universal relevance in low-fertility societies. Despite the origins of these frameworks in Northern Europe and the United States respectively, the general consensus is that broad patterns do indeed appear to be universal, albeit with substantial variation in both the pace and nature of change. For example, the emergence of lowest-low fertility and rapid growth in non-marital childbearing in Southern Europe, with its history of Catholicism, familism, and patriarchy, can be seen as powerful evidence of the universality of change associated with the SDT. Research on diverging destinies has also shown that socioeconomic bifurcation in a range of family outcomes linked to both the SDT and to children's well-being has occurred in several western European countries (McLanahan 2004; McLanahan and Jacobsen 2015).

2.2 SDT and diverging destinies in East Asia

If we limit our focus to the onset and persistence of below-replacement fertility, East Asia would appear to be at the forefront of the second demographic transition. For example, Japan's TFR has been well below replacement for almost half a century and South Korea currently has the lowest TFR among OECD countries at 0.8 (IPSS 2022; OECD 2021b). Using one indicator of SDT onset – the year in which mean age at first childbirth rose to two years above the post-WWII minimum (Sobotka 2008) – Japan began the SDT in 1988, just a few years after the Scandinavian forerunners (Raymo 2022). However, research on the SDT has paid little attention to East Asian countries. We see two key reasons for the relatively limited role of SDT ideas in discussions and interpretations of persistent low fertility in East Asia.

The first is limited evidence of family behaviors associated with the SDT. This is particularly true of non-marital childbearing, which remains at negligibly low levels in all East Asian societies (Raymo et al. 2015). Given the centrality of non-marital

childbearing to patterns of family change in the SDT, does it make sense to apply this framework to societies where only negligibly small percentages of all births are to unmarried mothers and where premarital pregnancy, although not uncommon, almost invariably results in abortion or marriage prior to birth (Chang 1996; Kim 2017; Ma and Rizzi 2017; Raymo and Iwasawa 2008)? The same is true of premarital cohabitation. The prevalence of cohabitation experience has increased in recent years in Japan (Raymo, Iwasawa and Bumpass 2009), China (Yu and Xie 2015, 2021), and Taiwan (Lesthaeghe 2010), but it is clear that these unions rarely function as an alternative to marriage and are almost never a setting for childbearing. For example, Raymo and colleagues (2009) show that cohabiting unions in Japan tend to be short in duration and frequently result in marriage, a pattern that has been described as prelude to marriage (Heuveline and Timberlake 2004).

The second reason is relatively limited evidence of widespread emergence of the attitudes thought to underlie the package of family changes associated with the SDT. While there is evidence of major change in family-related attitudes in Japan and other East Asian societies, these attitudes differ from those in Northern Europe and other regions where the SDT is thought to be of particular relevance. Japan and Korea, in particular, have been characterized as 'gender essentialist' societies in which attitudes about the fundamentally different roles of men and women remain entrenched (Brinton et al. 2018; Brinton and Lee 2016) and as 'familistic' societies in which attitudes toward marriage and family obligations are not consistent with the process of individuation central to the SDT framework (Atoh 2001; Lee and Fujita 2011). For example, large majorities of unmarried men and women intend to marry, view marriage as essential for childbearing, and endorse the role of mothers as primary caregivers for children (Raymo 2022). It is clear that cohabitation is no longer highly stigmatized (Raymo, Iwasawa and Bumpass 2009), but it is also clear that marriage is preferred. Among 18–34-year-old unmarried respondents to the 2015 National Fertility Survey, 75% of men and 71% of women agreed (strongly or somewhat) that "if a couple is going to live together, they should marry" (IPSS 2017: 85).

Research on diverging destinies in East Asia is even less common than research on the SDT. To some degree, this simply reflects the fact that the diverging destinies framework is both more recent and is explicitly linked to the SDT. There are, however, a number of studies that pay attention to socioeconomic differentials in family outcomes that have been linked to children's resources and well-being. For example, there are strong negative educational gradients in divorce in Japan (Raymo, Fukuda, and Iwasawa 2013), Korea (Park and Raymo 2013), and Taiwan (Cheng 2016). This pattern, in conjunction with evidence that single-mother families (almost all of which are formed via divorce) are particularly disadvantaged in these societies (Park 2014; Shirahase and Raymo 2014), points to the potential relevance of diverging destinies. The only effort (of

which we are aware) to explicitly evaluate the relevance of diverging destinies in East Asia is Raymo and Iwasawa's (2016) examination of trends in several family behaviors in Japan. Their findings are mixed, with evidence of growing educational gradients in premarital pregnancy and maternal employment, a strong but stable negative educational gradient in divorce, and limited differentials in cohabitation, non-marital childbearing, and early childbearing. Overall, it is safe to say that attention to socioeconomic differences in family formation pathways in East Asia from the perspective of diverging destinies is quite limited. A recently published paper by Raymo, Park, and Yu (2023) partially addresses this limitation by summarizing and synthesizing research on socioeconomic differences in family behaviors and child outcomes in East Asia.

2.3 Cohabitation and childbearing in Japan

Only a handful of studies on Japan have examined cohabitation and its relationship with pregnancy, childbearing, and marriage. To some extent, this simply reflects the limited availability of appropriate data. Until recently, large national surveys ascertained only whether unmarried men and women were currently cohabiting or had ever cohabited. Without information on the timing, duration, and outcomes of non-marital unions for all men and women (including those currently married), it was impossible to measure the prevalence of cohabitation and its relationships with childbearing and how those patterns differed by socioeconomic status.

Two surveys conducted in 2004 (the first round of the Japan Generations and Gender Survey and the National Survey on Population, Family, and Generations in Japan) allowed for some initial insights, showing that experience of non-marital cohabitation increased markedly during the 1980s and 1990s (Iwasawa 2005; Raymo, Iwasawa, and Bumpass 2009; Tsuya 2006). Raymo and colleagues (2009) show that 21% of men and women in the youngest birth cohort (1980–1984) report ever cohabiting, up from 10% for those in the 1954–1959 birth cohort. Importantly, these studies also show that cohabiting unions tend to be relatively short in duration and, in about half of cases, result in marriage (see also Iwasawa 2013). This is interpreted as evidence that these unions typically serve as a prelude to marriage (i.e., a step in the marriage process) and perhaps in some cases as trial marriages (Raymo, Iwasawa, and Bumpass 2009).

Attention to relationships between cohabitation and childbearing clearly demonstrates that these are not unions in which childbearing is likely to occur. Raymo, Iwasawa, and Bumpass (2009) show that cohabiting unions are clearly associated with pregnancy – a pattern that should not be surprising in Japan's distinctive contraceptive environment (see Sato and Iwasawa (2006) for discussion of reliance on condoms, withdrawal, and the rhythm method in Japan). However, it is equally clear that non-

marital pregnancies (either within a cohabiting union or not) that are not terminated are almost always 'legitimated' by marriage. In particular, Raymo, Iwasawa, and Bumpass (2009) show that the lifetable probability of marrying subsequent to a pregnancy by age 40 is 16% for those who have cohabited and 10% for those who have not cohabited and that this difference is particularly pronounced at lower levels of educational attainment. While these findings are interesting and important for understanding how patterns of family formation are changing in Japan and the extent to which these changes are (or are not) consistent with prevailing frameworks for understanding family change in low-fertility societies, they are based on small samples from surveys conducted almost 20 years ago. There is clear need for an update, extension, and reassessment of trends and differentials in cohabitation, marriage, and childbearing in Japan.

Of particular importance is the need for more attention to the nature of the relationship between cohabitation, pregnancy, and marriage. It may be that cohabitation increases the risk of (unplanned) pregnancy, resulting in marriages that might not have occurred in the absence of this particularly strong incentive to formalize the union. Alternatively, it is possible that couples who intend to marry at some point begin living together (as married) before formally registering the marriage (Iwasawa 2013) and that, in some cases, pregnancy precedes the registration of marriage. It is also possible that these combinations of cohabitation, pregnancy, and marriage vary systematically with respect to characteristics such as age and educational attainment.

To shed light on these possibilities, we use the newest available national data to examine the prevalence and nature of cohabiting unions prior to marriage. As discussed in more detail below, the path to marriage in Japan can be long and can include multiple steps: engagement, cohabitation, pregnancy, living together as married, and registration of marriage. Importantly, the order and combination of these steps can vary. For example, a self-reported period of cohabitation may precede or follow engagement and/or pregnancy. Similarly, living together as married can precede or follow pregnancy and may either precede or coincide with official registration of the marriage. The experience of engagement and its timing relative to the initiation of cohabitation and pregnancy is an understudied component of the marriage process that can shed light on the extent to which these other transitions are, or are not, part of a planned pathway to marriage. For example, cohabitation following engagement may be best understood as a step in the preparation for marriage. By contrast, those who began cohabiting prior to engagement are likely a heterogeneous group, with some treating cohabitation as a trial marriage, some cohabiting for economic reasons, and others cohabiting as an alternative to dating. Careful attention to the combination and ordering of these various components of the first marriage process can provide indirect insights into the meaning of cohabitation and how it varies across both time and levels of educational attainment. In the process, we seek to enhance our understanding of the role that pre-marital cohabiting unions play in the

marriage process in one society where marriage remains (for social, economic, and policy reasons) the only acceptable setting for childbearing.

3. Data and methods

3.1 Data

We used data from rounds 14 and 15 of the nationally representative Japanese National Fertility Survey (JNFS), conducted in 2010 and 2015 respectively. We focused on first-married women who were currently married to a first-married husband and had registered their marriage.[5] This focus on first-married couples naturally leads to a focus on differences across marriage cohorts rather than birth cohorts. We recognize that this focus is limiting in that marriage cohorts include men and women of varying ages, and thus of different birth cohorts exposed to different life circumstances. However, given the goals of this study, marriage cohorts are preferable to birth cohorts for several reasons. First, all members of a given marriage cohort have experienced union formation, by definition. Second, our explicit focus on delayed marriage registration (and the resulting experience of transitional cohabitation described below) and on premarital pregnancy naturally leads to a focus on marriage cohorts. Third, the analytical sample size is substantially larger for analyses of marriage cohorts (10,979 cases) than for analyses of birth cohorts (8,454 cases). This reflects the fact that analyses of birth cohorts should be limited to respondents who were at least 35 or 40 years old when surveyed (and thus near the end of the age range when first marriage rates are high). Finally, studies of premarital cohabitation often focus on marriage cohorts rather than birth cohorts (Hemez and Mannin 2017; Lichter, Turner, and Sassler 2010; Vitali and Fraboni 2022).

We used listwise deletion for missing data, excluding 387 observations with missing year and month of marriage registration, 49 observations missing year and month of the initiation of married life, 35 observations missing duration of premarital cohabitation, 149 observations missing year and month of first birth, and 645 observations missing year of engagement.[6] We used random number generation to impute 1,114 missing values for month of engagement. After imputing month of engagement, we removed cases for which engagement followed marriage registration (n = 27) or initiation of married life (n

[5] We also conducted analyses including higher-order marriages (results are presented in Figures A-1 and A-2). Specific findings differ somewhat, but general patterns are similar to those based on our main, more restrictive, analytical sample.

[6] Due to the large number of missing values for year of engagement, we compared results based on our analytical sample to those based on a larger sample that included observations with missing data for year of engagement. Figures A-3 and A-4 in the Appendix demonstrate that excluding those with missing values for year of engagement does not meaningfully impact our findings.

= 350) as well as those with missing information on educational attainment (44 cases). The resulting analytical sample consisted of 10,979 respondents.[7,8]

3.2 Measures of cohabitation

In addition to collecting information on the month and year of 3 marriage-related events (engagement, initiation of married life, and marriage registration), the JNFS asked married respondents if they cohabited with their current husband prior to the initiation of married life and, if so, for how long. This direct question about cohabitation is the basis of previous analyses of cohabitation using the JNFS (Iwasawa 2013). Importantly, previous research has also typically used the date of initiation of married life (*kekkon seikatsu wo hajimeru*) rather than the date of marriage registration to indicate the timing of marriage (e.g., Fukuda, Raymo, and Yoda 2019). In this study, however, we define first marriage timing as the date of marriage registration in order to more directly compare these Japanese data with survey data from other low-fertility countries. Doing so sometimes results in a gap between the initiation of married life and marriage registration – a period during which couples are living together as married before officially marrying. We treat this period of coresidence as a type of premarital cohabitation that has not been considered in previous research on Japan. We recognize that the phrase 'initiation of married life' is open to interpretation that presumably varies across respondents, but previous research demonstrating that cohabitation typically functions as a prelude to

[7] Table A-1 describes patterns of missing data for our 5 key variables: initiation of married life, duration of cohabitation, year and month of first birth, year and month of engagement, year and month of marriage registration, and educational attainment. The amount of missing data on the first two variables is similar across marriage registration cohorts, but missing values for year and month of engagement and first birth are more common in the earliest cohort. All four of the marriage process variables are more likely to have missing values among less-educated respondents. This is especially true for engagement timing. Our use of non-missing data may therefore underrepresent women from earlier marriage cohorts and those with a high school education or less in our analyses.

[8] Because the JNFS surveys provide detailed family formation histories only for currently married women age 18–49, marriage cohorts may not be fully comparable. Of particular importance is the fact that earlier marriage cohorts, who are older at the time of the surveys, will systematically overrepresent early marriages relative to more recent marriage cohorts. To minimize the potential impact of such compositional differences, we examined trends in pathways to first marriage by marriage cohort and by educational attainment using five different selection criteria: (1) women with marriage duration of less than 15 years, (2) women with marriage duration of less than 15 years in the 14th round survey and those with marriage duration of less than 20 years in the 15th round survey, (3) those with marriage duration of less than 20 years, (4) those who registered their marriage in 1995 or later, (5) no restrictions on marriage duration or year of marriage registration. Because we found little difference across these different inclusion criteria (see Table A-2 in Appendix), we describe results based on the fifth, and least restrictive, criterion. Despite these concerns about representativeness, for the reasons listed above we consider analyses of marriage cohorts preferable to analyses of birth cohorts.

marriage in Japan suggests that it is appropriate to treat this period of unmarried coresidence as a type of transitional premarital cohabitation.

The conventional sequencing of events in the marriage process in Japan is proposal and engagement, greeting the wife's parents to receive their approval, greeting the husband's parents, meeting with both sets of parents (often involving lunch or dinner together), reserving the wedding venue (typically a half year to one full year in advance of the ceremony), holding the wedding ceremony, and formally registering the marriage (Recruit Co., Ltd. 2023a). Because the duration from proposal to formal marriage registration can be long, it is not uncommon to start living together (i.e., 'initiate married life') at some point in this process. For example, this might happen if the lease on the couple's new apartment commences prior to their wedding date. The timing and ordering of events can also be influenced by preferences regarding the date of official marriage registration. For instance, some couples may choose one of their birthdays, their dating anniversary, or some lucky date (e.g., *Taian*, a date from *Rokuyō*, believed to be an auspicious day for any event, or the 22nd of November, which can be pronounced to sound like 'good couple day' – *ii fūfu no hi*) (Recruit Co., Ltd. 2023b).[9] Although the period between initiation of married life and marriage registration has not been treated as cohabitation in previous research using the JNFS, we believe that it is important to consider how our understanding of the prevalence and nature of cohabitation does or does not change when we treat this period as a distinctive form of cohabitation. We therefore construct and compare 3 different measures of cohabitation: i.e., (1) the conventional direct report of cohabitation (*dōsei*) before initiation of married life (called 'conventional cohabitation' hereafter), (2) the period of transitional cohabitation between initiation of married life and registration of marriage ('transitional cohabitation'), and (3) the combination of conventional and transitional cohabitation for those who experienced both.

3.3 Methods

Using information on the month and year of initiation of conventional cohabitation, conception of firstborn child, engagement, initiation of married life, and first marriage registration, we first summarized trends in the 3 types of premarital cohabitation just described. We then constructed 4 different sets of first marriage pathways that incorporate both cohabitation and premarital pregnancy. This construction of pathways is very similar to the approach used in a recent study of cohabitation and marriage by Kojima (2020). Finally, we extended this typology to also include the timing of engagement. We

[9] There are six labels in Japanese calendars that tell the fortune of each day, based on which people often make life decisions, especially those regarding weddings, funerals, and other ceremonial events.

described trends and differentials in these pathways across first marriage cohorts (1978–2015) and categories of educational attainment (high school or less, vocational school or junior college, and university or more). We defined 6 marriage cohorts based on reported year of marriage registration: 1978–1989, 1990–1994, 1995–1999, 2000–2004, 2005–2009, and 2010–2015.

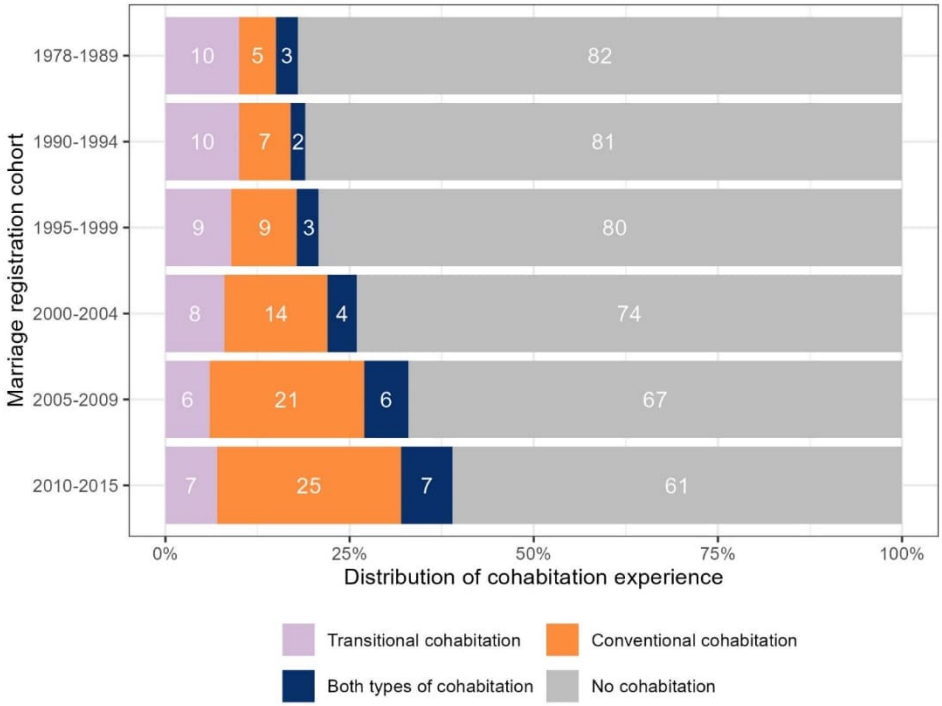
4. Results

Figure 1 describes trends in women's premarital cohabitation experience (with their current husband) by marriage cohort. In the earliest marriage cohort (1978–1989), less than 20% of women cohabited with their husband prior to marriage.[10] Cohabitation experience increased steadily across marriage cohorts, reaching 39% for the 2010–2015 marriage cohort.[11] Conventional cohabitation is indicated in orange, transitional cohabitation in purple, and the combination of conventional and transitional cohabitation in blue. The prevalence of cohabitation based on conventional retrospective questions increased from 8% in the 1978–1989 cohort to 32% in the 2010–2015 cohort (orange and blue segments) while the period of cohabitation between initiation of married life and marriage registration – what we are calling transitional cohabitation – was relatively stable at between 6% and 10% across these marriage cohorts (or 12%–14% if we include those who experienced both types of cohabitation). Figure 2 shows that less-educated women were slightly more likely to cohabit than the other two groups (27% vs. 24%), but educational differences are very small in comparison with cohort change. These small educational differences are consistent with the findings of previous research based on different data (Raymo, Iwasawa, and Bumpass 2009; Tsuya 2006).

[10] Note that these figures based on first-married couples are not comparable to those referenced above in the studies by Iwasawa (2005), Raymo, Iwasawa, and Bumpass (2009), and Tsuya (2006), which are based on all respondents.

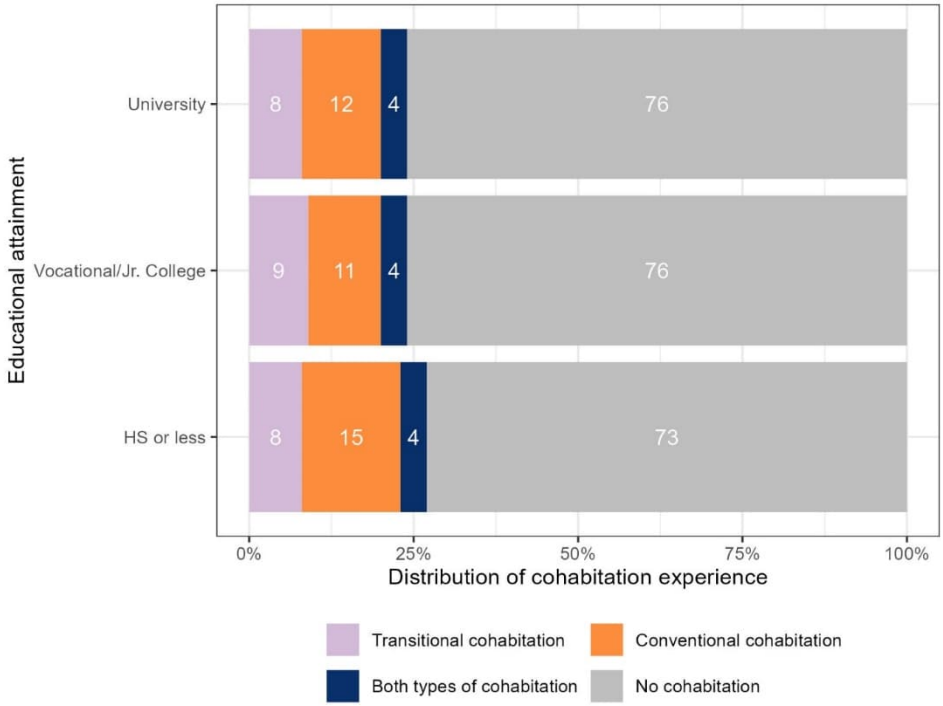
[11] It might be possible to argue that an increase in premarital cohabitation across marriage cohorts is due to delayed marriage timing. However, those who experienced conventional cohabitation actually married earlier than those without cohabitation experience in all marriage cohorts (see Table A-4 in Appendix). Also, those who experienced transitional cohabitation and those without cohabitation experience do not differ in their mean age at marriage registration. Therefore, cohabitation experience (as we have measured it) does not appear to be a likely result, or cause, of delayed marriage. We suspect that a more important factor in the trend toward later marriage is the cohabiting unions that we do not observe – i.e., those that do not result in marriage. Examining the extent to which nonmarital union dissolution contributes to observed trends in age at first marriage would be a very interesting and important exercise, but is not possible with the JNFS data we use. We would ideally use data that provide information on the beginning and end dates of all cohabiting unions rather than the much more limited information on cohabitation with current spouse available in the JNFS data that we use.

Figure 1: Trends in premarital cohabitation, by marriage cohort (1978–2015)



Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

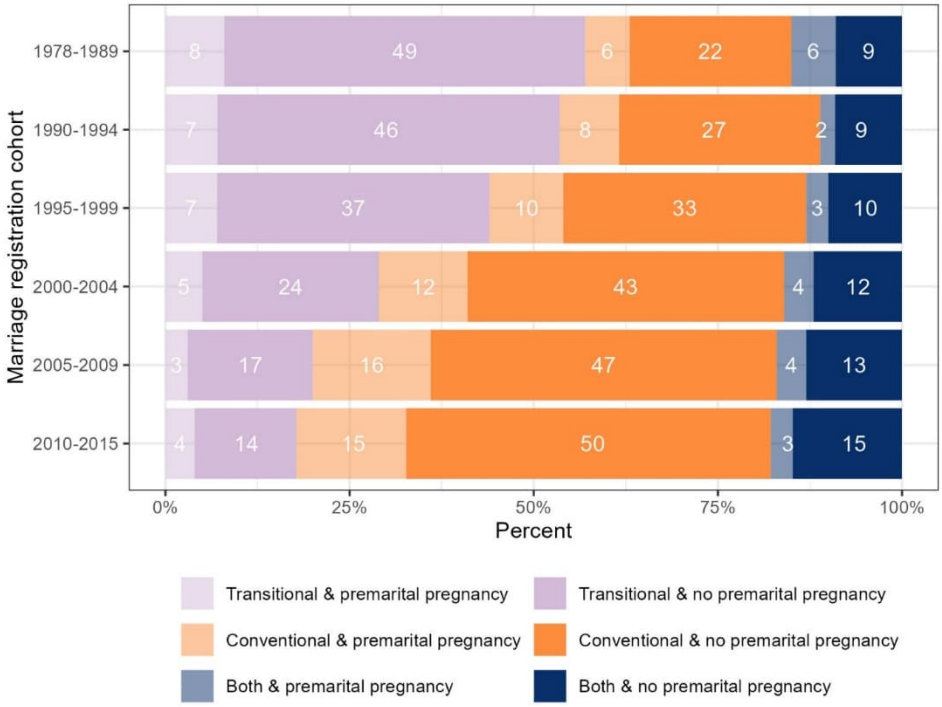
Figure 2: Differences in premarital cohabitation, by educational attainment



Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure 3 presents trends in a 4-category summary of pathways to marriage, reflecting both the type of cohabitation (with current husband) and the experience of premarital pregnancy. Lighter shading indicates the percentage of each group that was pregnant prior to marriage registration. For all 3 types of cohabitation, the percentage of women pregnant prior to marriage ranged between 18% and 23%. Among all cohabiting unions the proportion of transitional cohabitations with premarital pregnancy fell by half, from 8% in the 1978–1989 marriage registration cohort to 4% in the 2010–2015 cohort. The same is true for women who experienced both types of cohabitation (from 6% to 3%). By contrast, the prevalence of conventional cohabitation involving premarital pregnancy increased from 6% to 15%.

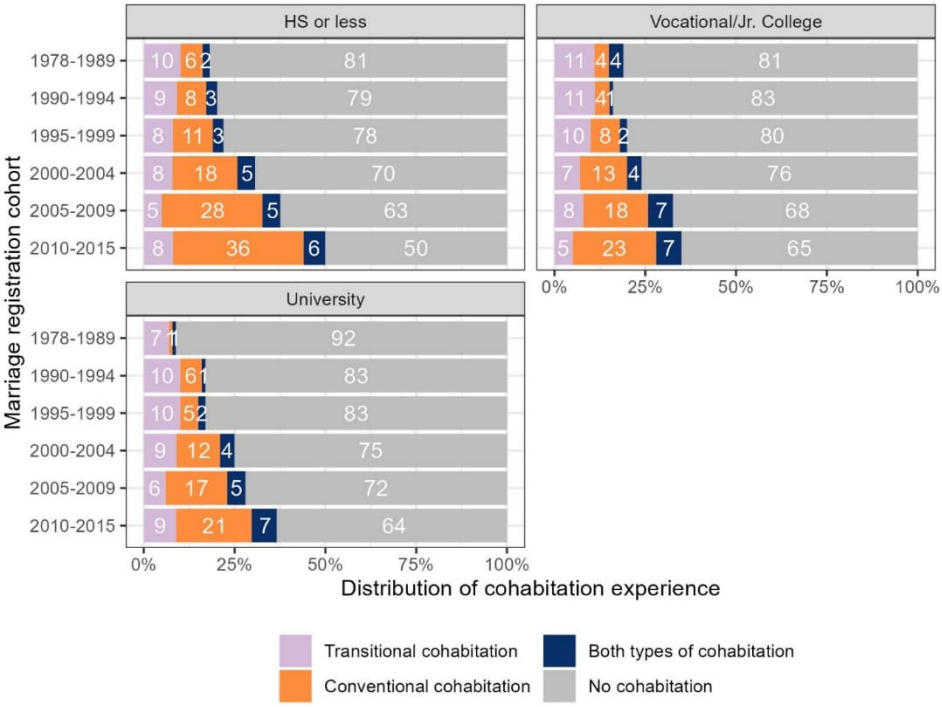
Figure 3: Trends in the composition of cohabiting unions, by union type, premarital pregnancy, and marriage cohort (1978–2015)



Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure 4 presents trends in premarital cohabitation by marriage cohort and educational attainment. This figure shows that the prevalence of premarital cohabitation increased markedly across all education levels and is now most prevalent among the lower-educated. In the most recent marriage cohort, 50% of the low-educated group cohabited with their current husband before marriage, while 35% of the middle-educated category and 37% of the high-educated women reported cohabiting. This growing educational gap in cohabitation experience primarily reflects the relatively rapid (30 percentage point) increase in the prevalence of conventional cohabitation among women with a high school education or less; trends in transitional cohabitation across marriage cohorts do not vary much by educational attainment.

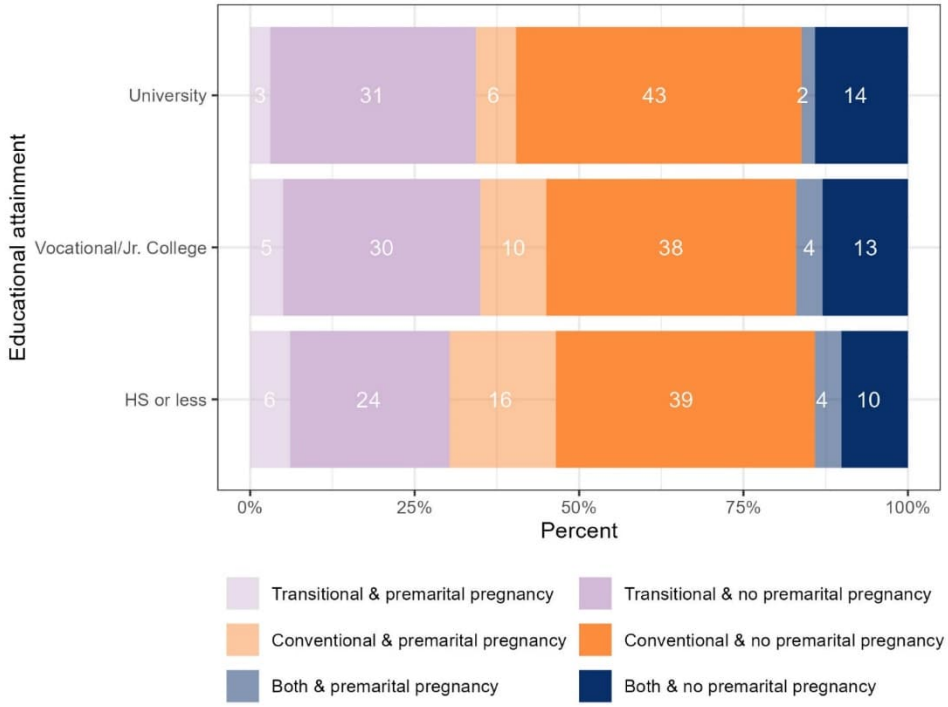
Figure 4: Trends in premarital cohabitation, by marriage cohort (1978–2015) and educational attainment



Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

In contrast to the small educational differences in the overall trend of premarital cohabitation (Figure 2), Figure 5 shows that premarital pregnancy is more common among less-educated women. This is particularly true for conventional cohabitation, with 20% of all cohabitations among women in the lowest education group being conventional cohabitations (alone or in combination with transitional cohabitation) with premarital pregnancy, compared to 14% for the middle education group and 8% for the highly educated. A similar pattern is observed for transitional cohabitation (not in combination with conventional cohabitation), but at lower levels (6% of the low-educated and 3% of the high-educated women who cohabited experienced transitional cohabitation with premarital pregnancy).

Figure 5: Differences in the composition of cohabiting unions, by union type, premarital pregnancy, and educational attainment



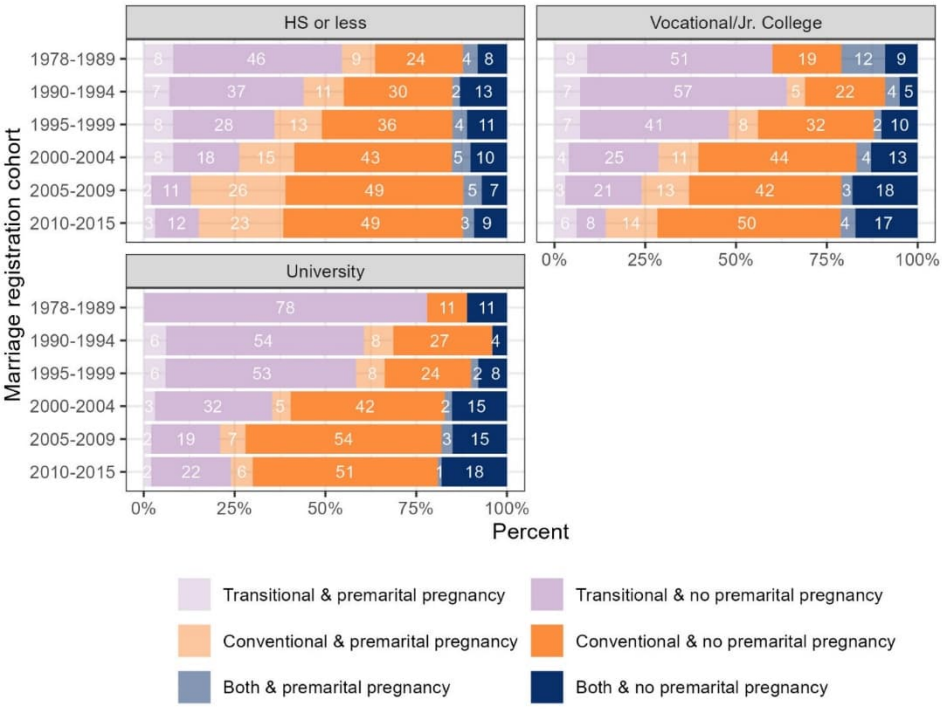
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure 6 shows the distribution of cohabitation type and premarital pregnancy by both marriage cohort and educational level. Among women who cohabited with their husband before marriage, the share of transitional cohabitation was larger in the oldest marriage cohort, particularly among university graduates (78% for university graduates vs. 54% for those with a high school degree or less in the 1978–1989 cohort), but decreased across marriage cohorts for all educational levels.[12] Conventional cohabitation (alone or in combination with transitional cohabitation) represents the large majority of cohabiting unions in the most recent marriage cohort (84% for women with a high school

[12] If we also include the transitional cohabitations among those who also experienced conventional cohabitation, in the 1978–1989 cohort the figures are 89% for university graduates and 66% for those with a high school degree or less.

education or less, 85% for vocational school or junior college graduates, and 76% for those with a university degree or higher). The prevalence of premarital pregnancy among transitional cohabitors decreased across marriage cohorts for all women, but the trend among conventional cohabitors varies by educational attainment. Among low-educated women who cohabited, the prevalence of those who reported conventional cohabitation (alone or in combination with transitional cohabitation) with premarital pregnancy rose from 13% (1978–1989 marriage cohort) to 26% (2010–2015 marriage cohort). A smaller increase can be seen for the middle-educated group (vocational school/junior college). However, the percentage of women in the highest education group fluctuated within a narrow range (7%–10%).

Figure 6: Trends in the composition of cohabiting unions, by union type, premarital pregnancy, educational attainment, and marriage cohort (1978–2015)

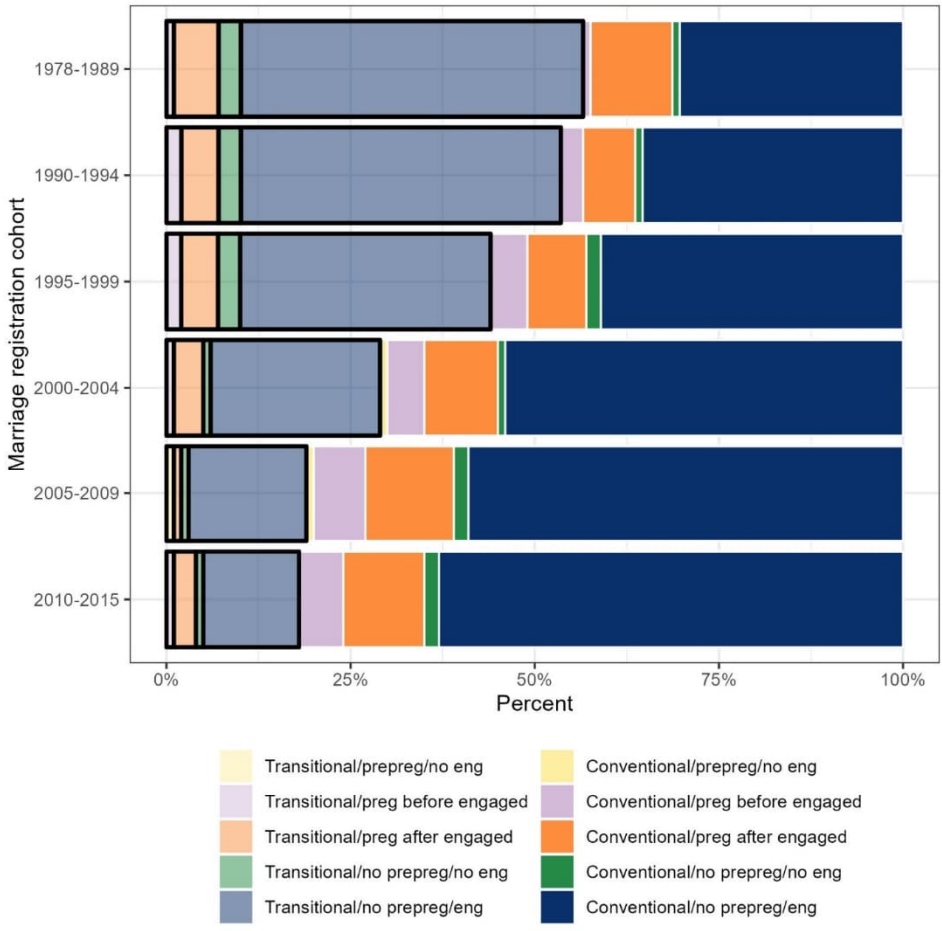


Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

We next consider the temporal ordering of engagement and premarital pregnancy for the different types of premarital cohabitation. To simplify the presentation of a large amount of information, we combine the conventional cohabitation group with the group representing women who experienced both conventional and transitional cohabitation. Here, our goal is to provide insight into the meaning of the different types of cohabitation based on an assumption that pregnancies prior to engagement are more likely to be unplanned than pregnancies that follow engagement. Of course, some respondents who were pregnant prior to marriage never got engaged (or did not report engagement in the survey). Figure 7 describes the 5 combinations of engagement and pregnancy ordering (pregnancy before and after engagement, engagement without pregnancy, pregnancy without engagement, and neither pregnancy nor engagement) for the 2 categories of cohabitation experience, by marriage registration cohort. Lighter color tones represent conventional cohabitation and the darker tones represent transitional cohabitation.

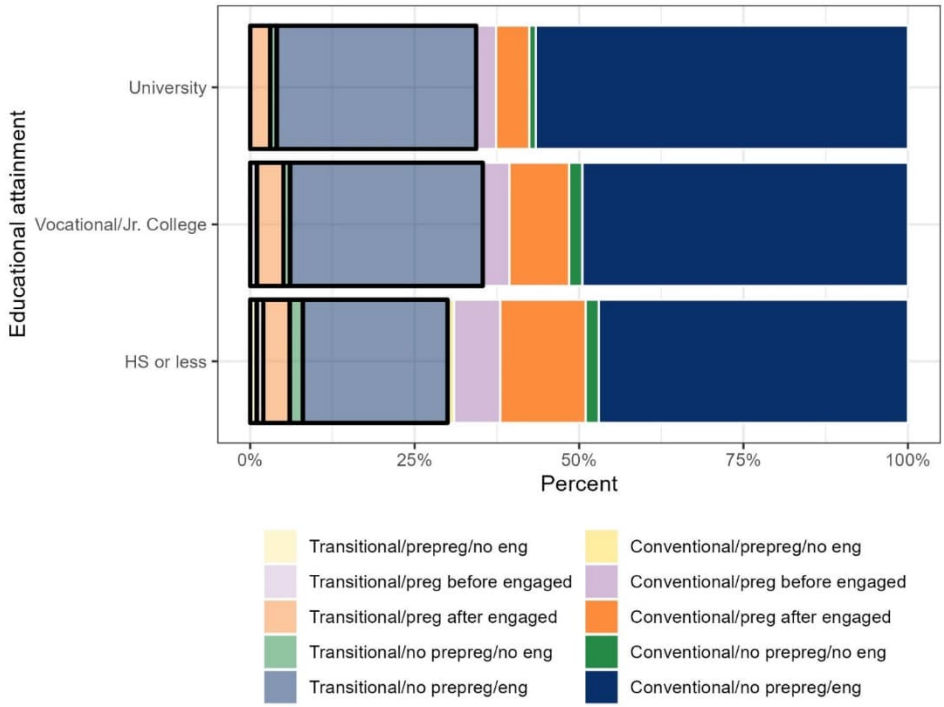
Among those who cohabited before marriage, the majority were engaged and not pregnant at the time of marriage. Among those who were pregnant at the time of marriage, pregnancy following engagement was much more common than pregnancy before engagement. Previous research has reported that premarital pregnancies are more likely to be unintended than those subsequent to marriage (e.g., Raymo, Musick, and Iwasawa 2015b), but no studies have considered differences in intention with respect to the temporal ordering of pregnancy and engagement. Figure 8 shows that premarital pregnancy prior to engagement is more common among women with lower levels of educational attainment, suggesting that unplanned pregnancy leading to marriage may be more common for this group.

Figure 7: Trends in the composition of cohabiting unions with respect to ordering of engagement and pregnancy, by union type and marriage cohort (1978–2015)



Note: 'prepreg' indicates premarital pregnancy, 'preg' is pregnancy, and 'eng' means engagement.

Figure 8: Differences in the composition of cohabiting unions with respect to ordering of engagement and pregnancy, by union type and educational attainment



Note: 'prepreg' indicates premarital pregnancy, 'preg' is pregnancy, and 'eng' means engagement.

5. Discussion

Depictions of a second demographic transition emphasize the role of non-marital cohabiting unions in the decoupling of marriage and childbearing. Extremely low levels of non-marital childbearing in Japan (and other low-fertility East Asian societies) are thus difficult to understand within the SDT framework. In this paper we used recent national survey data to describe pathways to first marriage in Japan, paying particular attention to cohabitation and its relationship with premarital pregnancy. We also paid attention to differences in pathways to first marriage by educational attainment, an important focus of SDT research as well as closely related work on the diverging destinies of children.

Information on change and variation in pathways to first marriage is valuable not only for context-specific evaluation of these broad frameworks for understanding family change and low fertility in wealthy countries, but also for understanding marriage and fertility in Japan.

Our efforts to understand cohabitation and premarital pregnancy as steps in the first marriage process build on earlier studies of the growing prevalence and distinctive features of cohabiting unions in Japan (Iwasawa 2005; Kojima 2020; Raymo, Iwasawa, and Bumpass 2009; Tsuya 2006). We show that premarital cohabitation is now a common part of the first marriage process, with the percentage of first-married women who lived with their husband prior to marriage increasing from 18% in the 1978–1989 marriage cohort to 39% in the 2010–2015 marriage cohort. An important innovation in our study is the distinction between initiation of married life and the actual registration of marriage. Delayed registration of marriage is not uncommon in Japan and, for the reasons we have described, the gap between initiation of married life and official registration of marriage can, and we believe should, be seen as a form of premarital cohabitation. Just as research on divorce typically focuses on separation rather than official registration of divorce, past research on marriage timing in Japan has focused on initiation of married life rather than registration of marriage. This makes sense, but it serves to understate the prevalence of premarital cohabitation in a society where a large proportion of cohabiting unions function as a step in the marriage process (Raymo, Iwasawa, and Bumpass 2009). We showed that this type of 'transitional' cohabitation is not as common as conventional cohabitation, that its prevalence has declined slightly across recent marriage cohorts, and that it sometimes occurs in combination with conventional cohabitation. By contrast, cohabitation experience measured using conventional retrospective questions has increased markedly, with 32% of first-married women in the 2010–2015 marriage cohort reporting this type of pre-marital union either alone or in combination with transitional cohabitation. While much lower than the prevalence among married couples in the United States and many European countries (e.g., the percentage of women who cohabited with their first husband before marriage was 70% among the 2010–2014 marriage cohort in the United States, Hemez and Manning 2017), this growth in cohabitation represents a fundamental shift in the first marriage process in Japan.

Another important finding is our confirmation of limited educational differences in the prevalence of premarital cohabitation but large educational differences in premarital pregnancy. As shown in earlier research (Raymo, Iwasawa, and Bumpass 2009), we demonstrate that the experience of cohabitation is more likely to be accompanied by pregnancy leading to marriage among women with a high school education or less. We also show that this difference has grown across marriage cohorts. In the 2010–2015 marriage cohort, less than 40% of women in the lowest educational group married without experiencing either cohabitation or pregnancy. The corresponding figure for

women who completed at least two years of post-secondary education was nearly 60%. These figures suggest that cohabitation is becoming an integral part of the marriage process for all women in Japan, but its meaning and function likely differ across the educational spectrum. Cohabitation appears to function primarily as a stepping-stone in the long path to first marriage among women with tertiary education, but may be a union of convenience that in some cases results in unplanned pregnancy among those with a high school education or less. This interpretation is also consistent with our evidence that the prevalence of pregnancy prior to engagement is higher among women at the lower end of the educational distribution.

In addition to the fact that we are unable to provide more definitive insights into trends and educational differences in the meaning of cohabitation, our study is limited in several ways. First, and most importantly, this is a study of first-married couples (and first-marriage cohorts). Not including remarried women was found to have little impact on our findings (Figures A-1 and A-2), but not including never married and formerly married individuals means that we are limiting our focus to those most likely to have experienced cohabitation. We show that 39% of recently married couples cohabited prior to marriage, but the percentage of currently unmarried men and women aged 18–34 who reported ever cohabiting was only 6.4% and 8.2% respectively (IPSS 2022). This is further evidence in support of the view that cohabitation is primarily a prelude to marriage in Japan. A second limitation is that we only had information on one cohabiting union. Married women were only asked whether they cohabited with their spouse prior to marriage. They were not asked how many times they had cohabited and we are not aware of any national data on multiple cohabiting unions. A third limitation is that we were not able to observe the circumstances that led to initiation of cohabitation. Of particular importance is recognizing that the alternative to cohabitation is less likely to be independent living (as it might be in Northern Europe or the United States) than continued coresidence with parents. This is especially true for women, the majority of whom coreside with parents until marriage (Yu and Kuo 2016). Fourth, we did not have reliable information with which to distinguish between those who chose to marry in response to a premarital pregnancy and those who chose to abort an unplanned premarital pregnancy. Given that nearly 1 in 5 women marry subsequent to pregnancy, a fuller understanding of first marriage pathways would benefit from the ability to observe selection into both pregnancy and the decision to give birth or, equivalently, the decision to marry. And finally, we need to acknowledge the difficulty of examining change over time in educational differences in societies characterized by rapid change in educational attainment. In our analytical sample the proportion of women with a four-year university education increased from 9% in the 1978–1989 marriage cohort to 35% in the 2010–2015 marriage cohort, implying that the selection processes that distinguish low- and high-educated respondents has changed markedly over time. Efforts to circumvent such

problems of temporal comparison often use relative educational attainment (e.g., tertiles or quartiles), but this is not possible with surveys like the JNFS that contain no information on years of education.

Despite these limitations, our descriptive summary of trends and differences in pathways to first marriage represents an important update on the role of cohabitation and pregnancy in the marriage process in Japan. Cohabitation has rapidly evolved from a rare experience to one that is quite common – indeed, half of recent marriages for women with a high school education or less were preceded by cohabitation. While this resembles trends in other countries, the continued role of cohabitation as a prelude to marriage and the tight link between marriage and childbearing continue to distinguish Japan from many other low-fertility countries.

It is important to consider how the growing prevalence of premarital cohabitation is related to low fertility in Japan (and East Asia more generally). On the one hand, it is possible that the emergence of cohabitation as an increasingly normative step in the family formation process increases fertility, or at least limits further decline. This would be the case when cohabitation functions primarily as a sexual relationship that 'compensates' for increasingly older ages at first marriage. Increased exposure to the risk of pregnancy in cohabiting, sexual relationships can promote marriage and parenthood directly via premarital pregnancy or indirectly via changing pregnancy and parenthood intentions/desires or reduction in perceived barriers to parenthood. Our results showing that there is some pregnancy within cohabitation (some of which is presumably not planned) is consistent with this scenario. On the other hand, the rise in premarital pregnancy may have little influence on fertility if most of the cohabiting unions we observe are simply a first step in marriages that would have taken place anyway. Our data do not allow for a convincing evaluation of this possibility. They also do not allow for a potentially important scenario in which growth in cohabiting relationships contributes to a reduction in fertility by lengthening the spouse search process. In this study we have examined only those cohabitations that transitioned to first marriage and not those cohabiting unions that dissolved. As shown in an earlier study (Raymo, Iwasawa, and Bumpass 2009), about half of all cohabiting unions in Japan do not result in marriage and documenting the relationship between these unions and subsequent marriage and fertility experience and timing is a critically important task for future research.

The fact that marriage remains essentially the only acceptable setting for childbirth is arguably the most distinctive feature of the family formation process in Japan (and other East Asian societies). Understanding the near absence of non-marital childbearing in Japan is not easy in light of the rise in cohabitation and the fact that divorce and single-parent childrearing are relatively common. Does the low prevalence of non-marital childbearing primarily reflect concerns about stigmatization of unmarried mothers and their children? The gender essentialist views of the need for both a mother and father

figure? The need to establish paternity? Addressing these questions in continued efforts to map and understand variation in the family formation process in Japan should be a primary task for researchers interested in understanding low fertility in Japan from a comparative perspective.

6. Acknowledgements

We thank Setsuya Fukuda for his initial contribution to an early draft of this paper. Permission to use the data on National Fertility Surveys was obtained through the research project of the National Fertility Surveys, the Department of Population Dynamics Research, the National Institute of Population and Social Security Research on the basis of the Statistics Act, Article 32(2020/6/10).

References

Atoh, M. (2001). Very low fertility in Japan and value change hypotheses. *Review of Population and Social Security Policy* 10: 1–21.

Atoh, M. (2008). Family changes in the context of lowest-low fertility: The case of Japan. *International Journal of Japanese Sociology* 17(1): 14–29. doi:10.1111/j.1475-6781.2008.00109.x.

Atoh, M., Kandiah, V., and Ivanov, S. (2004). The second demographic transition in Asia? Comparative analysis of the low fertility situation in East and South-East Asian countries. *The Japanese Journal of Population* 2(1): 42–75.

Brinton, M.C. (2008). *Lost in transition: Youth, education, and work in postindustrial Japan*. New York: Cambridge University Pres.

Brinton, M.C. (2020). Family and demographic issues in Japan. In: Takeda, H. and Williams, M. (eds.). *Routledge handbook of contemporary Japan*. London: Routledge: 171–190. doi:10.4324/9781315544748-12.

Brinton, M.C. and Lee, D.J. (2016). Gender-role ideology, labor market institutions, and post-industrial fertility. *Population and Development Review* 42(3): 405–433. doi:10.1111/padr.161.

Brinton, M.C., Bueno, X., Oláh, L., and Hellum, M. (2018). Postindustrial fertility ideals, intentions, and gender inequality: A comparative qualitative analysis. *Population and Development Review* 44(2): 281–309. doi:10.1111/padr.12128.

Chang, J. (1996). What do education and work mean? Education, nonfamilial work/living experiences and premarital sex for women in Taiwan. *Journal of Comparative Family Studies* 27(1): 13–40.

Cheng, Y-h.A. (2016). More education, fewer divorces? Shifting education differentials of divorce in Taiwan from 1975 to 2010. *Demographic Research* 34(33): 927–942. doi:10.4054/DemRes.2016.34.33.

Cherlin, A.J. (2004). The deinstitutionalization of American marriage. *Journal of Marriage and Family* 66(4): 848–861. doi:10.1111/j.0022-2445.2004.00058.x.

Elzinga, C.H. and Liefbroer, A.C. (2007). De-standardization of family-life trajectories of young adults: A cross-national comparison using sequence analysis. *European Journal of Population* 23: 225–250. doi:10.1007/s10680-007-9133-7.

Fukuda, S., Raymo, J., and Yoda, S. (2019). Revisiting the educational gradient in marriage in Japan. *Journal of Marriage and Family* 82(4): 1378–1396. doi:10.1111/jomf.12648.

Hemez, P. and Manning, W.D. (2017). Thirty years of change in women's premarital cohabitation experience. (Family Profiles, FP-17-05). Bowling Green, OH: National Center for Family and Marriage Research. https://www.bgsu.edu/content/dam/BGSU/college-of-arts-and-sciences/NCFMR/documents/FP/hemez-manning-30-yrs-change-women-premarital-cohab-fp-17-05.pdf.

Heuveline, P. and Timberlake, J.M. (2004). The role of cohabitation in family formation: The United States in comparative perspective. *Journal of Marriage and Family* 66(5): 1214–1230. doi:10.1111/j.0022-2445.2004.00088.x.

Hiekel, N. and Castro-Martín, T. (2014). Grasping the diversity of cohabitation: Fertility intentions among cohabiters across Europe. *Journal of Marriage and Family* 76(3): 489–505. doi:10.1111/jomf.12112.

Hiekel, N., Liefbroer, A.C., and Poortman, A.R. (2014). Understanding diversity in the meaning of cohabitation across Europe. *European Journal of Population* 30(4): 391–410. doi:10.1007/s10680-014-9321-1.

Iwasawa, M. (2005). Cohabitation in Japan. In: Mainichi Shimbun Population Problems Research Council (ed.). *Family attitudes in an era of very low fertility: Report on the 1st National Survey on population, family, and generations in Japan* [in Japanese]. Tokyo: National Institute of Population and Social Security Research: 69–104.

Iwasawa, M. (2013). An analysis of marriage decline and changes in marriage structures in Japan since 1970s using multiple decrement life tables on first marriage [in Japanese]. *Journal of Population Problems* 69(2): 1–34.

Kim, K. (2017). Trends and determinants of premarital conception: Love in Korea. *International Journal of Japanese Sociology* 26(1): 23–38. doi:10.1111/ijjs.12062.

Kojima, H. (2020). The strategy of cohabitation and family policy. *The Review of Law and Politics Kanagawa Law Review* 54(3): 1–49. [in Japanese]

Lee, K.S. and Fujita, Y. (2011). Economic recession and the nature and pace of social change in Japan. *Social Science Research* 40(3): 784–795. doi:10.1016/j.ssresearch.2011.01.002.

Lesthaeghe, R. (1995). The second demographic transition: Theory and evidence. In: Mason, K.O. and Jensen, A.-M. (eds.). *Gender and family change in industrialized countries*. Oxford: Clarendon Press: 17–62.

Lesthaeghe, R. (2010). The unfolding story of the second demographic transition. *Population and Development Review* 36(2): 211–251. doi:10.1111/j.1728-4457.2010.00328.x.

Lesthaeghe, R. (2020). The second demographic transition, 1986–2020: Sub-replacement fertility and rising cohabitation: A global update. *Genus* 76(1): 1–38. doi:10.1186/s41118-020-00077-4.

Lesthaeghe, R. and Neels, K. (2002). From the first to a second demographic transition: An interpretation of the spatial continuity of demographic innovation in France, Belgium and Switzerland. *European Journal of Population* 18: 325–360. doi:10.1023/A:1021125800070.

Lichter, D.T., Turner, R.N., and Sassler, S. (2010). National estimates of the rise in serial cohabitation. *Social Science Research* 39(5): 754–765. doi:10.1016/j.ssresearch.2009.11.002.

Lundberg, S. and Pollak, R.A. (2015). The evolving role of marriage: 1950–2010. *The Future of Children* 25(2): 29–50. doi:10.1353/foc.2015.0011.

Lundberg, S., Pollak, R.A., and Stearns, J. (2016). Family inequality: Diverging patterns in marriage, cohabitation, and childbearing. *Journal of Economic Perspectives* 30(2): 79–102. doi:10.1257/jep.30.2.79.

Ma, L. and Rizzi, E. (2017). Entry into first marriage in China. *Demographic Research* 37(36): 1231–1244. doi:10.4054/DemRes.2017.37.36.

Manning, W.D. (2013). Trends in cohabitation: Over twenty years of change, 1987–2010. (FP-13-12). National Center for Family and Marriage Research. Retrieved from http://ncfmr.bgsu.edu/pdf/family_profiles/file130944.pdf.

Manning, W.D. (2020). Young adulthood relationships in an era of uncertainty: A case for cohabitation. *Demography* 57(3): 799–819. doi:10.1007/s13524-020-00881-9.

McLanahan, S. (2004). Diverging destinies: How children are faring under the second demographic transition. *Demography* 41(4): 607–627. doi:10.1353/dem.2004.0033.

McLanahan, S. and Jacobsen, W. (2015). Diverging destinies revisited. In: Amato, P.R., Booth, A., McHale, S.M., and Van Hook, J. (eds.). *Families in an era of*

increasing inequality: Diverging destinies. New York: Springer: 3–23. doi:10.1007/978-3-319-08308-7_1.

National Institute of Population and Social Security Research (2017). *Marriage and childbirth in Japan today: The Fifteenth Japanese National Fertility Survey, 2015 (Results of singles and married couples survey)* [in Japanese]. Tokyo: National Institute of Population and Social Security Research.

National Institute of Population and Social Security Research (2022). *Recent demographic statistics* [in Japanese]. Tokyo: National Institute of Population and Social Security Research.

Ní Bhrolcháin, M. and Beaujouan, E. (2013). Education and cohabitation in Britain: A return to traditional patterns? *Population and Development Review* 39(3): 441–458. doi:10.1111/j.1728-4457.2013.00611.x.

Ochiai, E. (2014). The meaning of the second demographic transition and the establishment of a mature society. *European Societies* 16(3): 343–346. doi:10.1080/14616696.2014.916334.

OECD (2021a). OECD Income Distribution Database. https://www.oecd.org/social/income-distribution-database.htm.

OECD (2021b). OECD Family Database. https://www.oecd.org/els/family/database.htm.

Park, H. (2014). Single parenthood and children's education in Republic of Korea: An update. In: Park, J. and Kim, K.-k. (eds.). *Korean education in changing economic and demographic contexts*. Singapore: Springer: 153–171. doi:10.1007/978-981-4451-27-7_9.

Park, H. and Raymo, J.M. (2013). Divorce in Korea: Trends and educational differentials. *Journal of Marriage and Family* 75(1): 110–126. doi:10.1111/j.1741-3737.2012.01024.x.

Perelli-Harris, B. and Gassen, N.S. (2012). How similar are cohabitation and marriage? Legal approaches to cohabitation across Western Europe. *Population and Development Review* 38(3): 435–467. doi:10.1111/j.1728-4457.2012.00511.x.

Perelli-Harris, B. and Gerber, T.P. (2011). Nonmarital childbearing in Russia: Second demographic transition or pattern of disadvantage? *Demography* 48(1): 317–342. doi:10.1007/s13524-010-0001-4.

Perelli-Harris, B. and Lyons-Amos, M. (2016). Partnership patterns in the United States and across Europe: The role of education and country context. *Social Forces* 95(1): 251–282. doi:10.1093/sf/sow054.

Perelli-Harris, B., Sigle-Rushton, W., Kreyenfeld, M., Lappegard, T., Keizer, R., and Berghammer, C. (2010). The educational gradient of childbearing within cohabitation in Europe. *Population and Development Review* 36(4): 775–801. doi:10.1111/j.1728-4457.2010.00357.x.

Raley, R.K. (2001). Increasing fertility in cohabiting unions: Evidence for the second demographic transition in the United States? *Demography* 38(1): 59–66. doi:10.1353/dem.2001.0008.

Raymo, J.M. (2022). The second demographic transition in Japan: A review of the evidence. *China Population and Development Studies* 6: 267–287. doi:10.1007/s42379-022-00116-x.

Raymo, J.M. and Iwasawa, M. (2008). Bridal pregnancy and spouse pairing patterns in Japan. *Journal of Marriage and Family* 70(4): 847–860. doi:10.1111/j.1741-3737.2008.00531.x.

Raymo, J.M. and Iwasawa, M. (2016). *Diverging destinies: The Japanese case*. Springer. doi:10.1007/978-981-10-0185-7.

Raymo, J.M., Fukuda, S., and Iwasawa, M. (2013). Educational differences in divorce in Japan. *Demographic Research* 28(6): 177–206. doi:10.4054/DemRes.2013.28.6.

Raymo, J.M., Iwasawa, M., and Bumpass, L. (2009). Cohabitation and family formation in Japan. *Demography* 46: 785–803. doi:10.1353/dem.0.0075.

Raymo, J.M., Musick, K., and Iwasawa, M. (2015). Gender equity, opportunity costs of parenthood, and educational differences in unintended first births: Insights from Japan. *Population Research and Policy Review* 34(2): 179–199. doi:10.1007/s11113-014-9348-3.

Raymo, J.M., Park, H., Xie, Y., and Yeung, W.J.J. (2015). Marriage and family in East Asia: Continuity and change. *Annual Review of Sociology* 41: 471–492. doi:10.1146/annurev-soc-073014-112428.

Raymo, J.M., Park, H., and Yu, J. (2023). Diverging destinies in East Asia. Forthcoming in *Annual Review of Sociology* 49: 443–463. doi:10.1146/annurev-soc-020321-032642.

Recruit Co., Ltd. (2023a). A summary of the process after engagement to wedding and initiation of married life [electronic resource]. Tokyo: Recruit Co., Ltd. https://zexy.net/mar/junbi/ Accessed on 25th of April, 2023. [in Japanese]

Recruit Co., Ltd. (2023b). When is the best day to do a marriage registration? [electronic resource]. Tokyo: Recruit Co., Ltd. https://zexy.net/article/app000101064/ Accessed on 25th of April, 2023. [in Japanese]

Sato, R. and Iwasawa, M. (2006). Contraceptive use and induced abortion in Japan: How is it so unique among the developed countries? *The Japanese Journal of Population* 4(1): 33–54.

Shirahase, S. and Raymo, J.M. (2014). Single mothers and poverty in Japan: The role of intergenerational coresidence. *Social Forces* 93(2): 545–569. doi:10.1093/sf/sou077.

Sobotka, T. (2008). Overview chapter 6: The diverse faces of the second demographic transition in Europe. *Demographic Research* 19(8): 171–224. doi:10.4054/DemRes.2008.19.8.

Tsuya, N.O. (2006). Patterns and correlates of partnership formation in Japan [in Japanese]. *Journal of Population Problems* 62: 1–19.

Van de Kaa, D.J. (1987). Europe's second demographic transition. *Population Bulletin* 42(1): 1–59.

Vitali, A. and Fraboni, R. (2022). Pooling of wealth in marriage: The role of premarital cohabitation. *European Journal of Population* 38: 721–754. doi:10.1007/s10680-022-09627-2.

Yu, J. and Xie, Y. (2015). Cohabitation in China: Trends and determinants. *Population and Development Review* 41(4): 607–628. doi:10.1111/j.1728-4457.2015.00087.x.

Yu, J. and Xie, Y. (2021). Recent trends in the Chinese family: National estimates from 1990 to 2010. *Demographic Research* 44(25): 595–608. doi:10.4054/DemRes.2021.44.25.

Yu, W.H. and Kuo, J. C. L. (2016). Explaining the effect of parent-child coresidence on marriage formation: The case of Japan. *Demography* 53(5): 1283–1318. doi:10.1007/s13524-016-0494-6.

Appendix

Table A-1: Percentage of missing cases by marriage registration cohort and educational attainment, calculated by listwise deletion of 4 essential variables: initiation of married life, duration of cohabitation, year and month of first birth, and year of engagement by marriage registration cohort and educational attainment

	Initiation of married life	Duration of cohabitation	Year and month of first birth	Year of engagement
Marriage registration cohort				
1978–1989	0.6	0.3	2.4	6.8
1990–1994	0.2	0.1	1.1	6.3
1995–1999	0.5	0.2	1.6	5.9
2000–2004	0.5	0.4	1.2	6.2
2005–2009	0.3	0.3	0.6	4.7
2010–2015	0.6	0.6	1.2	4.6
Educational attainment				
HS or less	0.5	0.4	1.5	7.0
Vocational/Jr. College	0.3	0.3	1.2	5.1
University	0.4	0.1	1.1	4.3

Table A-2: Mean age at marriage registration by 5 different sample selection criteria and marriage registration cohort

	Selection criteria				
Marriage registration cohort	1	2	3	4	5
1995–1999	26.2	25.9	25.9	25.9	25.9
2000–2004	26.9	26.9	26.9	26.9	26.9
2005–2009	28.0	28.0	28.0	28.0	28.0
2010–2015	28.7	28.7	28.7	28.6	28.7

Note: The details of these 5 different sample selection criteria are the following: (1) women with marriage duration of less than 15 years, (2) women with marriage duration of less than 15 years in the 14th round survey and those with marriage duration of less than 20 years in the 15th round survey, (3) those with marriage duration of less than 20 years, (4) those who registered their marriage in 1995 or later, (5) no restrictions on marriage duration or year of marriage registration.

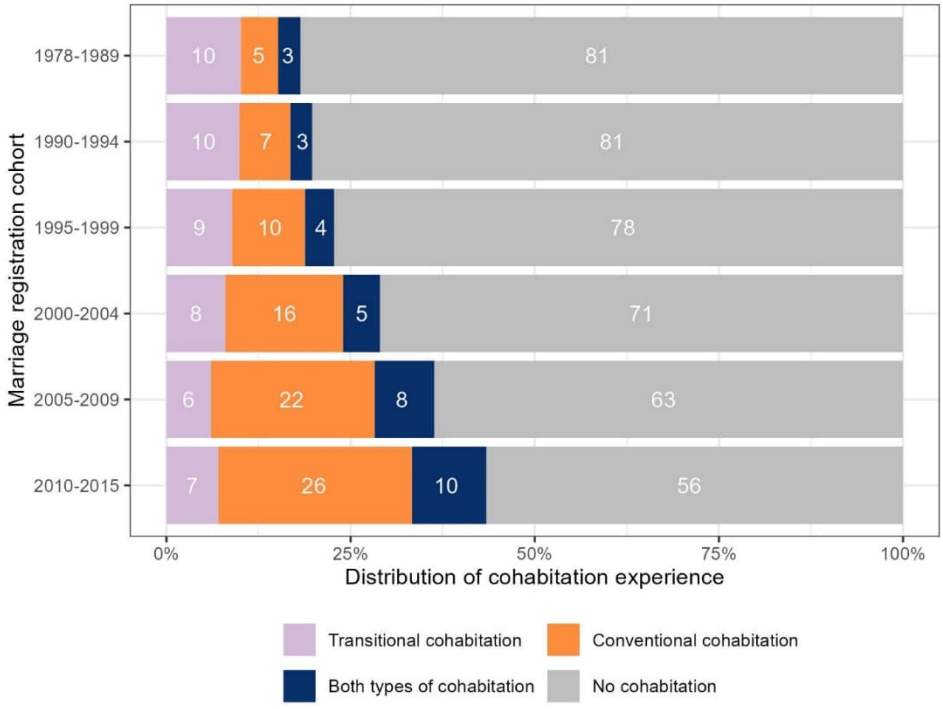
Table A-3: Summary measures of duration (months) of premarital cohabitation by 3 types of cohabitation and marriage registration cohort (1978–2015)

Marriage registration cohort		Conventional cohabitation	Transitional cohabitation	Both types of cohabitation		
				All	Before the initiation of married life	Between the initiation of married life and marriage registration
1978–1989	Median	15	2	22	15	7
	S.D	(32)	(5)	(24)	(19)	(9)
1990–1994	Median	30	2	25	15	10
	S.D	(37)	(10)	(42)	(23)	(25)
1995–1999	Median	30	2	30	15	7
	S.D	(50)	(7)	(28)	(23)	(14)
2000–2004	Median	30	2	32	15	7
	S.D	(43)	(10)	(53)	(39)	(23)
2005–2009	Median	30	2	30	15	7
	S.D	(51)	(13)	(54)	(51)	(14)
2010-2015	Median	30	4	43	28	10
	S.D	(46)	(7)	(90)	(53)	(46)

Table A-4: Mean age of marriage registration, by cohabitation experience and marriage registration cohort

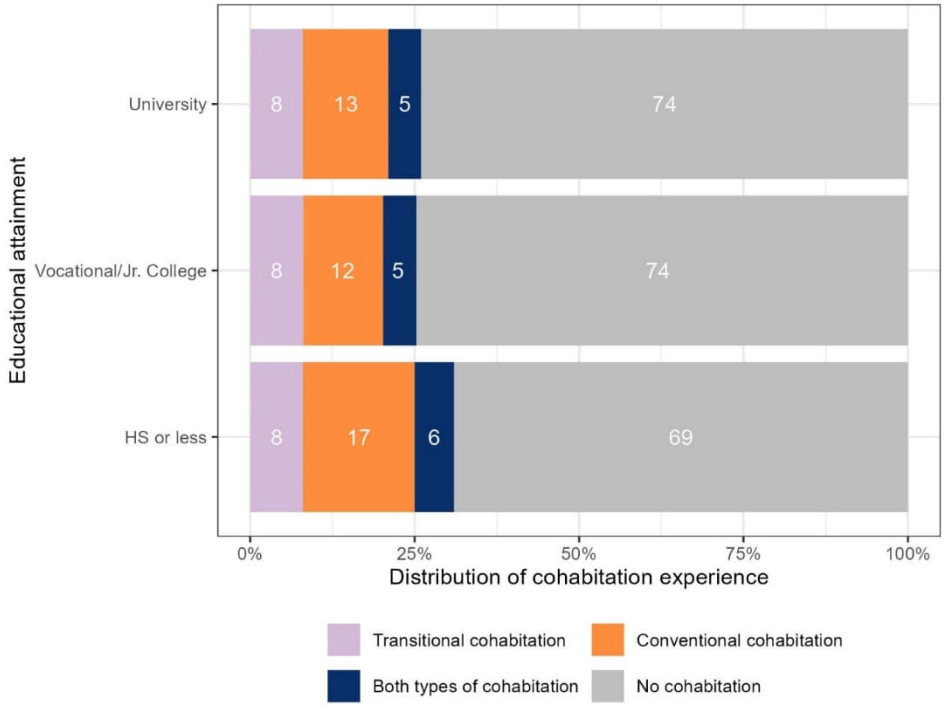
Marriage registration cohort	No cohabitation	Conventional cohabitation	Transitional cohabitation	Both types of cohabitation
1978–1989	23.2	22.2	23.3	22.2
1990–1994	24.9	23.8	25.2	24.9
1995–1999	25.9	24.9	26.9	25.3
2000–2004	27.0	26.0	27.4	27.1
2005–2009	28.2	27.2	28.5	27.7
2010–2015	29.0	27.6	29.4	29.1

Figure A-1: Trends in premarital cohabitation, by marriage cohort (1978–2015), including remarried couples



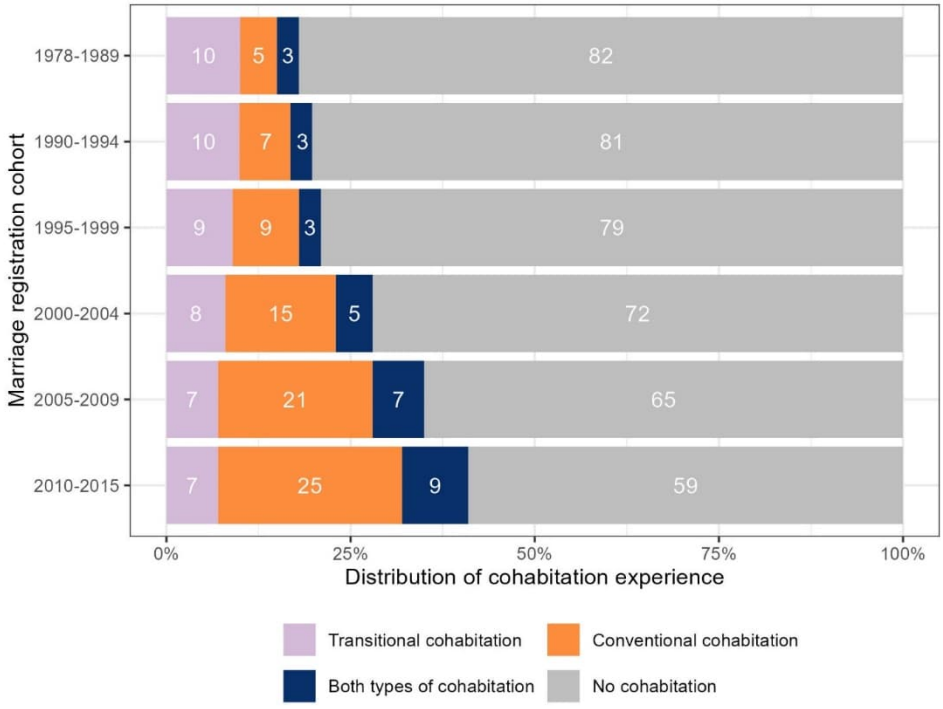
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-2: Differences in premarital cohabitation, by educational attainment, including remarried couples



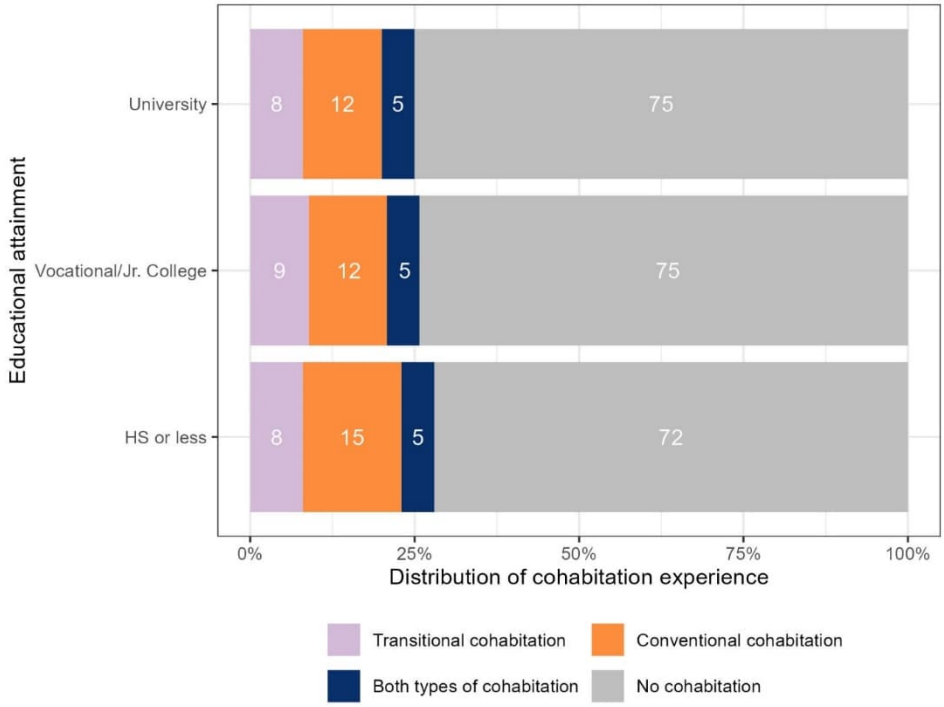
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-3: Trends in premarital cohabitation, by marriage cohort (1978–2015), including observations with missing values for year of engagement



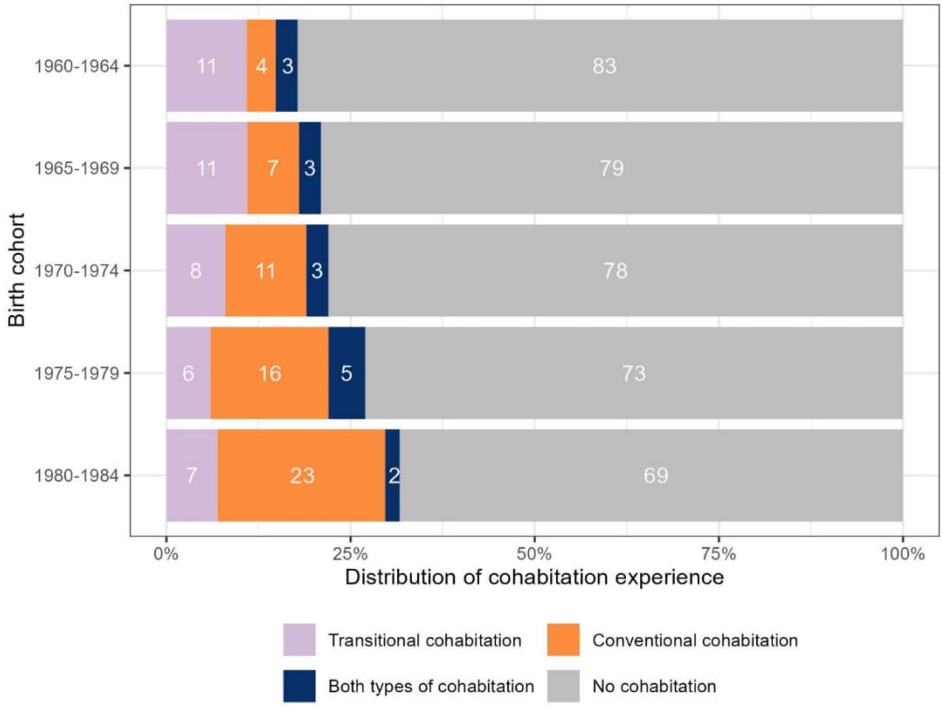
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-4: Differences in premarital cohabitation, by educational attainment, observations with missing data for year of engagement



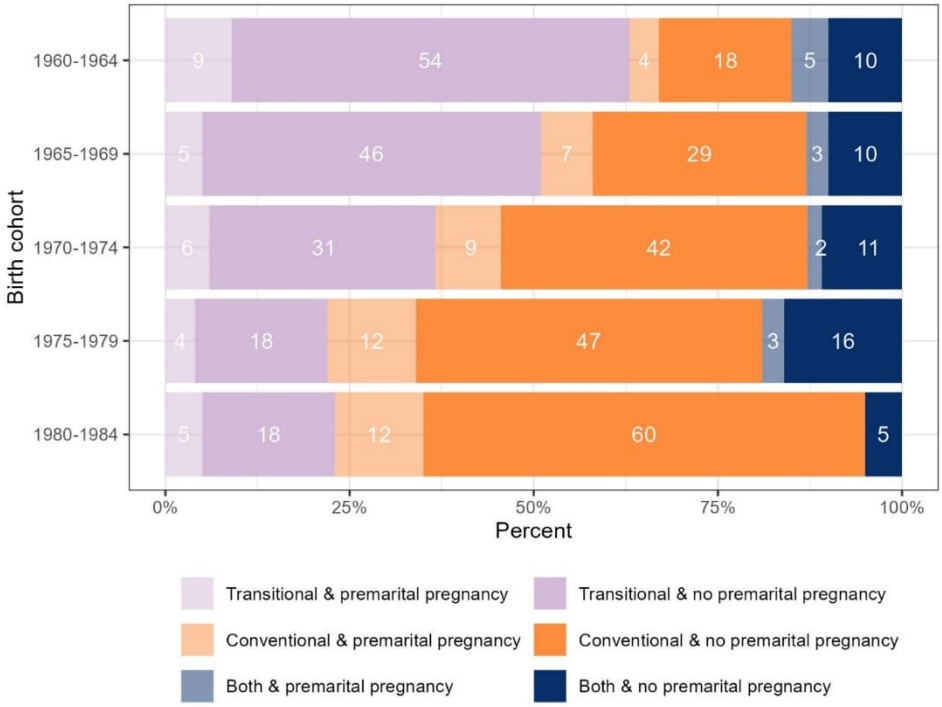
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-5: Trends in premarital cohabitation, by birth cohort (1960–1984)



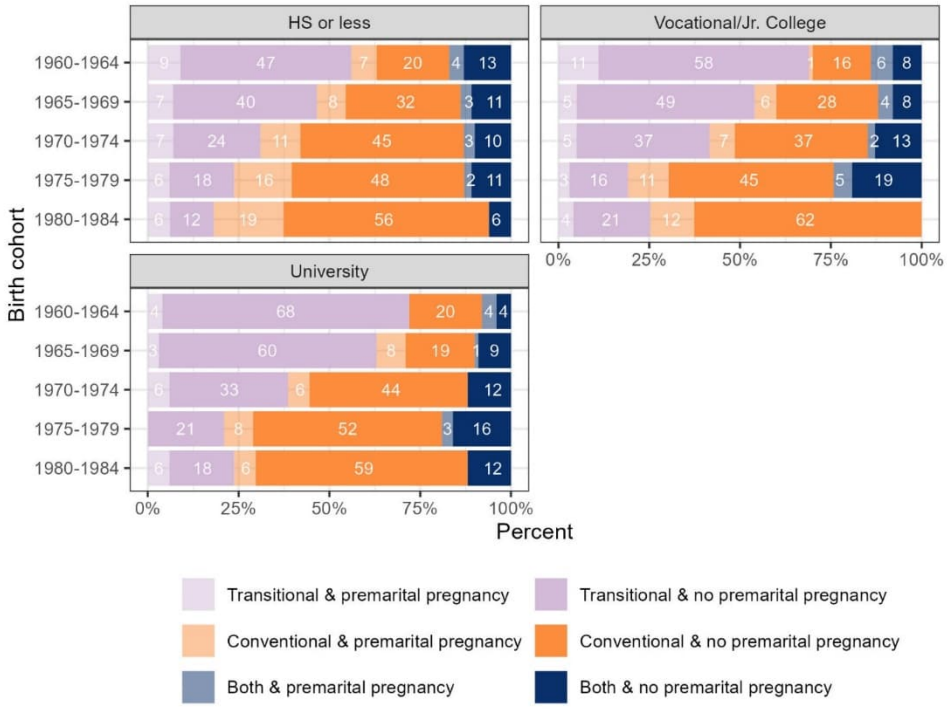
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-6: Trends in the composition of cohabiting unions, by union type, premarital pregnancy, birth cohort (1960–1984)



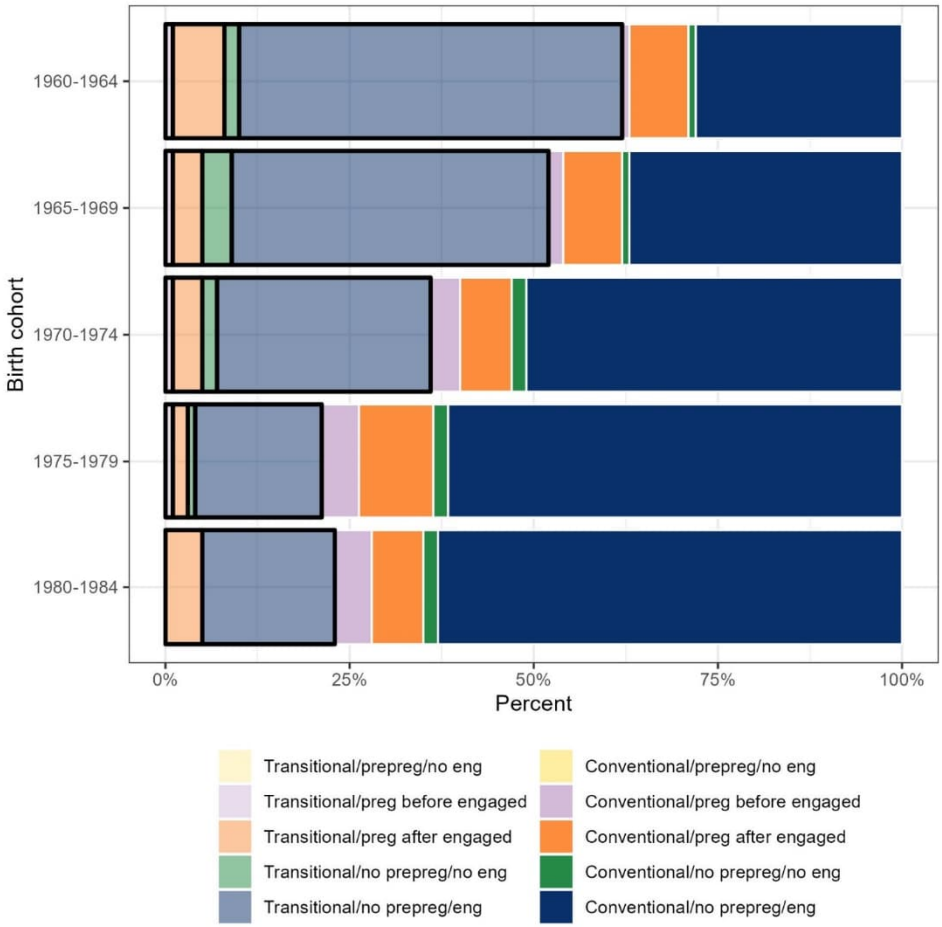
Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-7: Trends in the composition of cohabiting unions, by union type, premarital pregnancy, educational attainment, and birth cohort (1960–1984)



Note: The sum of the proportions within the same education level and marriage registration cohort may not be 100 due to rounding the numbers to the first decimal point.

Figure A-8: Trends in the composition of cohabiting unions with respect to ordering of engagement and pregnancy, by union type and birth cohort (1960–1984)



Note: 'prepreg' indicates premarital pregnancy, 'preg' is pregnancy, and 'eng' means engagement.