

RESEARCH ARTICLE

Post-pandemic marriage trends in Japan:
Impacts of economic conditions and parental
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Abstract

The COVID-19 pandemic has significantly impacted family formation among young people worldwide, contributing to a sharp decline in fertility rates. This study examines whether the relationship between young people's economic and family circumstances and their transition to marriage changed temporarily or persistently before and after the pandemic in Japan, a context characterized by prolonged pandemic control measures and a rigid gender division of labor. Using data from the Japanese Panel Study of Employment Dynamics (2016–2024), we conducted discrete-time logistic regression analyses with marital events as the dependent variable, restricted to unmarried individuals. The results indicate that men with lower incomes were temporarily more likely to delay marriage after the pandemic. In addition, men in non-regular employment tended to marry later than those in regular employment, and this pattern persisted after the pandemic; however, the gap between these groups narrowed because men in regular employment also delayed marriage compared to the pre-pandemic period. Changes in the effects of employment status and income on marriage were observed exclusively among men following the pandemic. Furthermore, young people living with their parents were more likely to delay marriage during the pandemic period. These findings suggest that the association between marriage transitions and individual attributes shifted both temporarily and persistently after the pandemic, contributing to the observed decline in marriage rates. This empirical analysis of Japan during the pandemic extends our understanding of how COVID-19 affected marriage behavior in other national contexts.

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1. Introduction

The COVID-19 pandemic began in 2020 and severely disrupted social and economic activities worldwide, leading to a significant decline in marriage and birth rates (Iwasawa *et al.*, 2021; Sobotka *et al.*, 2021; Wagner *et al.*, 2020). Previous studies have shown that social crises and recessions affect family formation among young people.

In developed countries, childbearing is often postponed during economic crises, whereas economic uncertainty tends to decline during periods of stability and growth (Sobotka *et al.*, 2011). Recessions can alter family life by constraining the choices that individuals and couples make regarding family formation and by activating the family's role as an emergency support system (Cherlin *et al.*, 2013). In other words, economic recessions may lead people to postpone childbearing until economic conditions are improved and to delay marriage until stable employment is secured. In addition, during recessions, families may function as emergency support systems; for example, parents may temporarily live with their unmarried adult children to provide financial support. These behaviors can be understood as defensive responses of individuals and families during social crises.

However, the downturn in social and economic activities caused by the COVID-19 pandemic differs from a typical economic recession in several aspects. The pandemic was characterized not only by economic decline but also by strong behavioral restrictions implemented to prevent the spread of COVID-19. During the pandemic, young people were more likely to experience job loss or income reductions due to the recession, while simultaneously facing restrictions on social activities and interpersonal contact in both work and daily life.

Given these conditions, we assumed that the COVID-19 pandemic may have altered the relationship between marital entry and socioeconomic attributes. To address this issue empirically, we focused on two points. First, we focused on the financial standing of men and women, which plays a critical role in delayed marriage among young people (Becker, 1981; Blossfeld *et al.*, 2005; Oppenheimer, 1988, 1994). This is because the recession and behavioral restrictions associated with the pandemic negatively affected young people's economic conditions and prospects. If changes occurred in the association between financial standing and family formation, did these changes persist after the pandemic? Second, although families often function as emergency support systems during recessions (Cherlin *et al.*, 2013), did family support during the COVID-19 pandemic contribute to delays in family formation among young people? Specifically, this study focuses on young people living with their parents, as parental co-residence may encourage people to postpone their marriage. Young people who lived with their parents tended to marry later (Yu & Kuo, 2016); however, it remains unclear whether the pandemic temporarily or permanently reinforced this tendency.

This study aims to clarify whether the relationship between young people's economic and family

circumstances and their transition to marriage changed temporarily or persistently before and after the pandemic in Japan. Japan offers a compelling context for examining marriage postponement before and after the pandemic because the trend toward late marriage was already evident prior to COVID-19. Japan's total fertility rate began to decline during this pandemic period and has continued to decrease to the present (Ghaznavi *et al.*, 2022; Ministry of Health, Labour and Welfare, 2025). The rate of unmarried individuals had been rising even before the pandemic, but it increased further afterward (Statistics Japan, 2023a). Since the pandemic, single people have become less likely to find a dating partner, whereas unmarried individuals with a dating partner have become more likely to marry (Chiba *et al.*, 2025). As cohabitation among unmarried couples and nonmarital childbearing remain relatively uncommon in Japan, delays in marriage are closely linked to declining fertility (Iwasawa, 2008; Raymo *et al.*, 2015, 2021; Tsuya *et al.*, 2019). Even before the pandemic, both financial standing and co-residence with parents were associated with delayed marriage; deteriorating employment conditions among young people contributed to later marriage timing (Matsuda & Sasaki, 2020; Matsuda *et al.*, 2024; Mugiyama, 2017, 2025; Piotrowski *et al.*, 2015), and parental cohabitation also delayed marriage (Yamada, 1999; Yu & Kuo, 2016). During the COVID-19 pandemic, Japan implemented behavioral restrictions that appeared less stringent than those in many Western countries but were maintained over a longer period due to economic recession, employment insecurity, and restrictions on interpersonal contact (Matsuda & Takenoshita, 2023), as discussed in the next subsection. The continued rise in late marriage and the decline in fertility after the pandemic suggest that the linkages between financial standing, family status, and the transition to marriage may have changed, either temporarily or structurally. To address this possibility, this study uses large-scale longitudinal survey data from Japan that were collected using the same methods both before and after the pandemic. These data allow for a rigorous comparison of whether the associations between individuals' financial standing or family status and marriage transitions changed across the pandemic period. A clearer understanding of these mechanisms will help explain delays in family formation during and after the pandemic.

1.1. Marriage decline, youth employment, and COVID-19 in Japan

1.1.1. Theoretical framework and context

Two important points are discussed based on theoretical frameworks on the relationship between economic resources and the transition to marriage. First, young people,

particularly men, require a stable economic foundation for marriage. In Becker's (1981) marriage market model, which assumes traditional gender roles in the division of labor based on comparative advantage between couples, men with higher incomes are more attractive in the marriage market and more inclined to marry; conversely, men with lower incomes are less likely to marry. Low-income individuals are also less likely to marry or to be considered suitable marriage partners because they do not meet the economic requirements for starting married life (C. M. Gibson-Davis *et al.*, 2005; C. Gibson-Davis *et al.*, 2018). In addition to current levels of economic resources, employment uncertainty undermines expectations regarding future earnings (Oppenheimer, 1988, 1994); thus, uncertainty about employment prospects can lead to the postponement of marriage (Blossfeld *et al.*, 2005). This negatively affects young people's family formation, especially among those who have not established stable careers. This hypothesis has been supported by studies in major Western countries (Blossfeld *et al.*, 2005; Burstein, 2007; Kalmijn, 2011; McClendon *et al.*, 2014).

Second, existing theories have also addressed how women's rising educational attainment and economic resources shape marriage timing. According to Becker's (1973, 1981) theoretical model of marriage, women's economic resources affect the costs and benefits of marriage. Women with higher education and income levels postpone marriage when the opportunity costs associated with marriage and childbearing are high. This model assumes that family formation is motivated by gender specialization in paid work and household labor. Since the 1970s, some countries have experienced substantial increases in female employment and declines in gender inequality in employment and wages. Women's growing economic independence challenges the assumptions of Becker's model. In societies with high gender inequality, Becker's model explains the association between women's socioeconomic status and the transition to marriage. However, in societies with lower levels of gender inequality, highly educated women with higher earnings can better combine work and family responsibilities, have greater financial resources for stable family life, and are more likely to form unions than women with lower levels of education and income (Blossfeld, 1995; McDonald, 2009; Schneider *et al.*, 2019; Sweeney, 2002). Oppenheimer (2003) and Oppenheimer *et al.* (1997) focused on marriage timing rather than the static decision to marry, arguing that not only income level but also career stability and predictability strongly influence marriage timing; thus, uncertainty about future career prospects can delay marriage.

When applying these theories to Japan, it is necessary

to consider its unique social and economic context, which differs from that of Western societies. First, wages for young people in Japan have stagnated, and the number of non-regular employees with unstable employment has increased due to sluggish economic growth following the collapse of the bubble economy in the 1990s. In the Japanese labor market, there is a substantial gap in employment security and wages between regular and non-regular employees. During recessions, non-regular employees tend to lose their jobs more than regular employees (Genda *et al.*, 2010). Second, Japan has strong traditional gender norms, with women primarily responsible for household chores and men expected to work in the labor market (Brinton & Oh, 2019; Raymo *et al.*, 2015). The gender wage gap in Japan is larger than that in many other countries (Kanbayashi & Takenoshita, 2014).

In addition, young people in Japan face relatively limited opportunities to meet potential partners, a key mechanism underlying delayed marriage. According to a survey of unmarried men and women, the most common reason for remaining unmarried is not having met a suitable partner (National Institute of Population and Social Security Research [NIPSSR], 2022). This reflects changes over time in where couples meet. While arranged marriages accounted for a substantial share of marriages until the 1980s, they have become much less common since the 1990s. Instead, workplaces increasingly served as sites for partner meetings, often referred to as "job-related marriages." Because Japanese employees tend to work long hours and spend considerable time with coworkers, workplaces provide opportunities for relationship formation. However, opportunities to meet partners outside the workplace have been limited by long working hours. Since the 2000s, the proportion of job-related marriages has declined, and this decline has not been offset by increases in partner meeting opportunities outside the workplace (Iwasawa & Mita, 2007). These changes in meeting opportunities have made marriage more difficult for young people in Japan.

Moreover, the social norm that unmarried young adults should live independently from their parents is relatively weak in Japan, and co-residence with parents is common; the proportion of unmarried young adults living with their parents is in the mid-70% range (NIPSSR, 2022). Those who live with their parents are more likely to postpone marriage than those who live independently (Yamada, 1999; Yu & Kuo, 2016). One reason is that co-resident young adults do not bear housing and living expenses, allowing them to maintain a higher standard of living than those with similar incomes who live independently. As a result, individuals who live with their parents may delay

marriage until their own income increases sufficiently to meet the expected financial demands of family formation, or, for women, until they find a partner with a higher income.

Empirical research has documented these patterns in Japan. The impact of deteriorating employment conditions on marriage is more pronounced for men because of strong gender role expectations. Numerous studies have shown that men with lower incomes or non-regular employment marry significantly later than their counterparts (Matsuda & Sasaki, 2020; Matsuda *et al.*, 2024; Mugiyama, 2017, 2025; Piotrowski *et al.*, 2015; Sakai & Higuchi, 2005; Tsuya, 2011). Non-regular employees and unemployed men are less likely than regular employees to form stable partnerships and to transition to marriage after forming them (Mugiyama, 2024). The relationship between women's occupational status and marriage has historically been unclear in Japan (Piotrowski *et al.*, 2015; Tsuya, 2011). However, more recent studies suggest that women with stable employment are increasingly likely to marry earlier (Matsuda *et al.*, 2024; Mugiyama, 2017; Sasaki, 2012). This shift may reflect deteriorating employment conditions for men and expanded institutional support for balancing work and childcare. Research further suggests that the effect of women's regular employment on marriage operates not primarily through women's own income but through increased opportunities to meet men with higher economic resources in the workplace (Matsuda & Sasaki, 2020). Cohabitation with parents is also a strong predictor of marriage timing among young people (Matsuda *et al.*, 2024; Sasaki, 2012; Yu & Kuo, 2016), although some studies have reported no significant association between parental co-residence and marriage timing (Fukuda, 2006).

1.1.2. Impact of COVID-19 countermeasures on marriage

There have been several waves of infection worldwide since the COVID-19 pandemic began, including in Japan. The Japanese government restricted travel abroad, declared a state of emergency, and implemented various measures to prevent the spread of infection. Three emergency declarations occurred during the following periods: (i) April 7 to May 25, 2020; (ii) January 8 to March 21, 2021; and (iii) April 25 to September 30, 2021. Major measures adopted by the Japanese government during the emergency declarations included the promotion of telework, restrictions on restaurant operating hours after 8:00 p.m., closure of large commercial establishments, limits on the number of spectators at events, encouragement to stay at home to reduce opportunities for human contact, and mask-wearing (Matsuda & Takenoshita, 2023).

The state of emergency in Japan took the form of a "request" from the government and was not as strict as those implemented in many European countries. However, this may be attributed to the "national character" of the Japanese population, whose actual behavior was relatively strict. During this period, people wore masks when going out or working, and social distancing was widely enforced. People were no longer able to eat or drink together in restaurants (Matsuda & Takenoshita, 2023). Workers, especially those with regular employment, higher-status occupations, and jobs at large firms, engaged in telework (Shin & Takenoshita, 2022). In other words, although Japan's COVID-19 countermeasures appeared relatively lenient on the surface (Humanitarian Data Exchange, 2022), many Japanese individuals complied with government requests, resulting in substantial suppression of economic activities and business operations (Matsuda & Takenoshita, 2023).

These efforts to prevent infection had several impacts on Japanese society. First, Japan was able to control the number of COVID-19 cases and deaths. Compared with major Western European and North American countries, the number of COVID-19 cases in Japan was relatively low, and deaths from COVID-19 per capita were less than one-tenth those in other countries (World Health Organization, 2022).

In addition, in the first half of 2020, Japan's economic growth rate declined more slowly than that of other major advanced economies (Minister of State for Economic and Fiscal Policy, 2020, 2022). The labor market experienced a significant decline in the number of non-regular employees and a slight increase in the number of regular employees. Meanwhile, non-regular employees worked much shorter hours, which significantly reduced their monthly earnings (Takahashi, 2022). From the first quarter to the second quarter of 2020, business confidence among both large and small firms in Japan declined sharply. Subsequently, large firms experienced a marked recovery, whereas small and medium-sized enterprises (SMEs) recovered more slowly (Minister of State for Economic and Fiscal Policy, 2020, 2022).

The final point concerns the effects on family formation. The marriage rate per 1,000 people remained at approximately 4.8 during the three years prior to the COVID-19 pandemic, but declined sharply after the pandemic to 4.3 in 2020 and 4.1 in both 2021 and 2022 (Statistics Japan, 2023b). This change indicates that it has become increasingly difficult for Japanese youth to marry following the pandemic. However, existing studies have not yet clarified whether marriage became more difficult for specific segments of the youth population or for young people as a whole.

1.2. Hypotheses

As described in the previous section, studies conducted before the COVID-19 pandemic in Japan showed that young people with weaker financial standing tend to marry later in life, and this relationship is particularly pronounced among men because of the strong male-breadwinner model. This study focuses on non-regular employment, low income, and employment in SMEs as indicators of weak financial standing. Although these factors are all economically disadvantageous, they have different implications. Income reflects an individual's economic situation, whereas employment type, independent of income, indicates employment stability and career maturity. In this study, company size is used as an indicator of organizational stability. The pandemic may have caused greater economic damage among young people with weaker financial standing. Young people in non-regular employment, with lower incomes, and working in SMEs are therefore likely to experience greater difficulty in marrying after the pandemic.

The hypotheses are as follows:

- (i) Hypothesis 1: Young people with weaker financial standing, such as those in non-regular employment, those with lower income, and employees of smaller firms, postpone marriage more than those with stronger financial foundations.

The relationship described in Hypothesis 1 is more likely to occur on the male side because previous studies have shown that individuals with weaker economic foundations, particularly men, are less likely to marry in Japan (Matsuda *et al.*, 2024; Mugiyama, 2024, 2025; Piotrowski *et al.*, 2015; Tsuya, 2011). Thus, Hypothesis 2 is formulated.

- (ii) Hypothesis 2: Relationships in which those with weaker financial standing are less likely to transition to marriage after the COVID-19 pandemic occur exclusively among men.

Families function as emergency support systems during social crises (Cherlin *et al.*, 2013). The high rate of unmarried adults living with their parents is a distinctive feature of Japanese families and is associated with delayed marriage. This may have contributed to the decline in marriage rates among young people during the pandemic. Parents of unmarried individuals—many of whom are aged 60 years or older—belong to an age group at higher risk of death from COVID-19. A survey conducted in Japan during the pandemic showed that 88% of older adults were concerned about contracting COVID-19 (Survey Research Corporation, 2020). Therefore, young people living with their parents may have been more concerned about transmitting COVID-19 to them than those living independently and may have restricted their behavior

more strongly by avoiding face-to-face contact with others. This may have reduced opportunities to meet and date.

- (iii) Hypothesis 3: The difference in the likelihood of marital entry by living with parents is greater after the COVID-19 pandemic compared to that before the pandemic.

2. Data and methods

2.1. Data

This study used 2016–2024 data from the Japanese Panel Study of Employment Dynamics (JPSED), conducted by the Recruit Works Institute. The target population for this survey comprised male and female individuals aged 15 years and older living throughout Japan. The sample was drawn from registered monitors owned by the survey company and was allocated by gender, age, and employment status, based on the results of the Labor Force Survey conducted by the Statistics Bureau of the Ministry of Internal Affairs and Communications in Japan, to reflect the attributes of the population. The first web survey was conducted in January 2016, followed by January of each subsequent year. The survey replenishes the sample annually. This study used a sample of all unmarried individuals aged 22–34 from 2016 to 2024, excluding students and unemployed individuals. Most marriages in Japan occur between couples in their late 20s or early 30s (Statistics Japan, 2023a). Marriage rarely occurs when students are still in college. Therefore, this age group was selected for the analysis. The sample comprised 11,831 men and 9,086 women (men: 23,741 person-years; women: 18,380 person-years). We conducted the same analysis using a sample with an upper age limit of 39 years and obtained results similar to those from the original analysis regarding changes in relationships among the attribute variables before and after the COVID-19 pandemic. The survey is expected to continue beyond the year 2025. However, given the purpose of this study, which was to examine young people's marriages in Japan amid the socioeconomic disruption caused by the COVID-19 pandemic, we used data up to 2024. This is because Japan is expected to experience a sharp economic upturn in 2025, which will significantly alter the economic circumstances of young people.

These data allowed us to analyze the themes of this study. The sample size was considerably larger than that of other available panel data; thus, we could investigate attributes related to life events such as marriage. Data were collected through a web-based survey. The same data collection methods were used when the COVID-19 pandemic prevented surveyors from conducting in-person surveys. Therefore, this survey facilitated a comparison of the pre- and post-pandemic situation, which is an advantage of

using it in this study. However, the respondents were not randomly selected. In Japan, random sampling has been widely used in academic surveys because researchers can easily access basic resident registers in local governments and randomly select survey targets (hereafter, “conventional surveys”). However, the response rate to conventional surveys has declined significantly in recent years. In response to these changes in the survey environment, web surveys have rapidly gained popularity in Japan (Akio *et al.*, 2014). Although the COVID-19 pandemic has made it difficult to conduct conventional surveys due to behavioral restrictions, many web surveys have been conducted without the risk of spreading infection. However, respondents to web surveys tend to have higher educational levels and occupational status, as well as a stronger sense of competitiveness and meritocracy, compared to randomly selected samples (Ishida *et al.*, 2009). The Science Council of Japan (2020) recommends web surveys for academic research, considering their advantages and disadvantages.

In this study, we compared the sample demographics (percentage of respondents who graduated from university or higher, in regular employment, in SMEs, and living with a parent) of the Japanese General Social Survey (JGSS), a repeated cross-sectional, random sampling survey conducted at the same time as the JPSED sample used in this study. The JPSED sample had a lower percentage of respondents living with their parents than the JGSS sample; however, their demographics were generally similar. A sample of JGSS 2015–2022 respondents with the same conditions as the sample used for this analysis (22–34 years old, never married, no children, regular employment, or non-regular employment) was counted. The JGSS results are as follows (male values, female values): percentage with university or higher degree (50.2%, 48.3%), in regular employment (76.2%, 65.8%), in SMEs (67.1%, 65.9%), and living with parents (76.2%, 76.4%).

2.2. Variables

The dependent variable was a dummy variable (1 = experienced a marital event; 0 = did not), indicating whether unmarried individuals experienced a marital event within one year of the independent variable (described below). Because this dependent variable reports marital status in January of each year, it approximates the occurrence of a marriage event in the previous year. It is not known whether these marriages were first marriages owing to data limitations; however, marriage events are generally considered to represent first marriages for young people.

The independent variables used were as follows (unless otherwise noted, each was derived from information

available at the time the survey was conducted in January of each year). The unique feature of this study is that it analyzed the main effects of each independent variable and the interaction effects between them and the year of marriage. For this purpose, the variables analyzed for interactions were simple. The educational level of respondents was a categorical variable: junior high school or below, high school (reference), junior college, university, and graduate school. The variable related to occupation was the employment status a month before the survey (December of the year before). Employment status was coded as a binary indicator of regular employment (0 = no; 1 = yes). The respondent industry sectors were categorical variables: agriculture, manufacturing (reference), infrastructure and information technology, service industry, and official business. Firm size was a binary variable (0/1), indicating SMEs with fewer than 1,000 employees. The annual income of an individual (the value from the previous year) was the mean income for men and women, centered at zero for each gender. We used dummy variables for living with parents (0/1) and for respondents' age (centered). Categorical variables for metropolitan areas, Kinki, and other areas were used as regions of residence. To analyze the change in the ease of marrying young people before the COVID-19 pandemic, we used the years up to 2020, which was before the pandemic, as a collective reference (the 2020 survey was conducted in January 2020, before the pandemic), and 2021–2024 categorical variables were created for each of these years using the survey years in which the dependent variable was measured.

2.3. Analytical strategy

A discrete-time logit model was used as the dependent variable to predict the marital events. The timing of marriage among young people and its relationship with other variables differ between men and women; thus, previous studies analyzed the sample separately for men and women. Therefore, we conducted a gender-based analysis.

The discrete-time logit model is specified as follows:

$$\log \frac{P(t)}{1 - P(t)} = b_0 + b_1 x_1 + b_2 x_2(t) \quad (1)$$

We denoted the odds as $P(t)$, the conditional probability of the event occurring at time t , given that the individual has not already experienced it. This equation assumes two types of independent variables: x_1 , which is constant over time, and $x_2(t)$, which varies with time (Allison, 2014). In this equation, we transformed the hazard of the marriage event into a logit and regressed it on the independent variables.

3. Results

Table 1 presents the descriptive statistics of the variables. The incidence of marital events during the observation period was low (3.5% of men and 5.2% of women). This reflects the rapid increase in the number of unmarried women in recent years. A notable feature of the employment profile is that 76.2% of men and 68.0% of women were in regular employment, which means that one in four men and one in three women were in non-regular, unstable employment. More than half of the respondents lived with their parents.

Table 1. Descriptive statistics

Parameter	Male		Female	
	M	SD	M	SD
Event of marriage (0/1)	0.035	-	0.052	-
Age (centering)	0.009	0.096	0.004	0.065
Education (ref.: High school)				
Junior high school and below	0.019	-	0.014	-
Junior college	0.155	-	0.279	-
University	0.501	-	0.471	-
Graduate school	0.075	-	0.021	-
Regular employment (0/1)	0.762	-	0.680	-
Industrial sector (ref.: Manufacturing)				
Agriculture	0.009	-	0.004	-
Infrastructure and information technology	0.118	-	0.081	-
Service industry	0.488	-	0.712	-
Official business	0.078	-	0.050	-
Small and medium-sized enterprises (0/1)	0.640	-	0.701	-
Annual income (centering)	0.000	1.904	0.000	1.557
Living with parents (0/1)	0.513	-	0.562	-
Area (ref.: Other)				
Metropolitan	0.344	-	0.330	-
Kinki	0.171	-	0.181	-

Notes: Men: 23,741 person-years; women: 18,380 person-years. 0/1 indicates a binary indicator.

Table 2 presents the results of the discrete-time logit model, using marital events as the dependent variable. In this model, only the main effects of the independent variables were used. The main findings for men were as follows: the odds of marriage differ significantly by employment status; the odds were 3.706 times higher for regular employees than for non-regular employees. The higher the annual income, the higher the odds; for every

million Japanese Yen increase in annual income, the odds increased by 1.075. Thus, men are more likely to marry if they have a stable job and a higher annual income. Those living with their parents had significantly lower odds (odds ratio [OR]: 0.484) than those living alone. Regarding education, the odds were high among university graduates (OR: 1.265). No differences were observed by company size. Regarding the industry, the odds were higher for official business (OR: 1.376). Residents in metropolitan areas had lower odds of marriage (OR: 0.802).

The results revealed that women in regular employment had higher marital odds (OR: 1.345) than those in non-regular employment. Marital odds were significantly lower (OR: 0.565) among women living with their parents than among those living separately from them. In contrast to the male results, the marital odds for women were higher among junior high school graduates and below (OR: 1.983), rather than among university graduates. For women, the marital odds were significantly lower after 2021 (ORs <0.819) than before 2020. The marital odds for men were significantly decreased by 2024 (OR: 0.627).

Next, an analysis of the interaction between each independent variable and survey year was conducted, along with the variables used in the model in **Table 2**. **Table 3** (men) and **Table 4** (women) present the results of these interactions. In the modeling, we controlled for the variables from **Table 2** that are not shown in **Tables 3** and **4**.

The interaction results for men indicate that the advantage of regular employment for marriage—that is, the tendency for regular employees to be more likely to marry than non-regular employees—generally diminished after the pandemic. When we replaced the survey year variable with a binary indicator for the post-pandemic period, the analysis revealed a significant negative interaction between the indicator and regular employment (OR: 0.506; **Table 5**). In contrast, the interaction between annual income and survey years showed that marital odds were higher for those with higher incomes in 2022 (OR: 1.131) and lower for those with lower incomes. However, this trend was no longer observed the following year, and the interaction OR was 0.953, suggesting a rebound. No main or interaction effects were observed for employees of SMEs. By 2022, those living with their parents had lower marital odds than before the pandemic (OR: 0.663). In addition, analyses using dummy variables after the pandemic showed that the marriage rate among those living with parents decreased (OR: 0.713; **Table 5**).

For women, the interaction between regular employment and 2021 showed a positive association with marriage (OR: 1.628). However, compared with men, the effects of employment status and annual income on marital

Table 2. Discrete-time logit model estimating marriage (odds ratio)

Parameter	Men			Women		
	OR	95% CI		OR	95% CI	
		Lower	Upper		Lower	Upper
Age	1.035**	1.014	1.058	1.049***	1.027	1.071
Age squared	0.987***	0.981	0.994	0.984***	0.978	0.990
Education (ref.: High school)						
Junior high school and below	0.807	0.369	1.766	1.983**	1.211	3.249
Junior college	1.219	0.951	1.561	1.059	0.865	1.297
University	1.265*	1.039	1.541	1.092	0.905	1.317
Graduate school	1.175	0.891	1.551	0.852	0.523	1.389
Regular employment	3.706***	2.710	5.068	1.345***	1.143	1.584
Industrial sector (ref.: Manufacturing)						
Agriculture	0.688	0.287	1.646	0.462	0.113	1.884
Infrastructure and IT	0.849	0.666	1.083	1.077	0.809	1.433
Service industry	0.874	0.739	1.035	1.037	0.858	1.252
Official business	1.376*	1.078	1.756	1.005	0.708	1.428
Small and medium-sized enterprises	0.945	0.804	1.112	0.953	0.818	1.110
Annual income	1.075***	1.050	1.100	1.056***	1.029	1.084
Living with parents	0.484***	0.413	0.568	0.565***	0.492	0.647
Area (ref.: Others)						
Metropolitan	0.802**	0.682	0.943	0.765**	0.656	0.892
Kinki	0.978	0.800	1.194	1.055	0.887	1.256
Survey year (ref.: Before 2020)						
2021	0.931	0.760	1.141	0.819†	0.668	1.004
2022	0.942	0.763	1.163	0.771*	0.628	0.946
2023	0.894	0.716	1.115	0.723**	0.589	0.888
2024	0.627*	0.433	0.910	0.694*	0.517	0.933
Number of person-years	23,741	-	-	18,380	-	-
−2 log-likelihood	6,750.3	-	-	7,310.4	-	-
χ^2	381.1***	-	-	202.3***	-	-
Degree of freedom	20	-	-	20	-	-

Notes: † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Abbreviations: IT: Information technology; OR: Odds ratio.

odds were generally weaker and did not persist after the pandemic. The interaction between living with parents and 2023 indicated lower marital odds (OR: 0.680). However, for women, there was no significant association between living with parents and marriage over the entire post-pandemic period (Table 6).

4. Discussion

This study analyzed the impact of the COVID-19 pandemic on marriage patterns in Japan and derived three key insights corresponding to the three hypotheses. First,

regarding Hypothesis 1—that young people with weaker financial standing would delay marriage more during the pandemic—the analysis showed that men with lower annual incomes did indeed delay marriage. Economic uncertainty during this pandemic has been cited as a potential factor contributing to delayed marriage (Guetto *et al.*, 2021), and this trend was particularly pronounced among low-income men in Japan. However, the findings regarding employment status differed slightly from this hypothesis. This study confirmed that men in non-regular employment married later than those in regular employment, as found

Table 3. Discrete-time logit model estimating marriage for men (odds ratios)

Parameter	Variable X that interacted with survey years									
	Regular employment		Annual income		SMEs		Living with parents			
	OR	95% CI Lower Upper	OR	95% CI Lower Upper	OR	95% CI Lower Upper	OR	95% CI Lower Upper	OR	95% CI Lower Upper
Variable X	5.096 ^{***}	3.231 8.039	1.071 ^{***}	1.040 1.102	0.946	0.769 1.164	0.561 ^{***}	0.458 0.689		
Survey year (ref.: Before 2020)										
2021	2.255 [*]	1.100 4.622	0.903	0.729 1.118	0.895	0.661 1.213	1.024	0.806 1.302		
2022	0.950	0.324 2.788	0.846	0.674 1.062	0.907	0.665 1.239	1.061	0.829 1.357		
2023	1.546	0.617 3.876	0.928	0.743 1.159	0.985	0.720 1.347	0.957	0.735 1.245		
2024	2.156	0.632 7.358	0.663 [*]	0.456 0.964	0.610 [†]	0.341 1.091	0.747	0.496 1.123		
Survey year × Variable X (ref.: Before 2020 × Variable X)										
2021 × Variable X	0.387 [*]	0.183 0.819	1.039	0.940 1.149	1.076	0.714 1.621	0.734	0.466 1.155		
2022 × Variable X	0.987	0.329 2.958	1.131 [*]	1.022 1.252	1.074	0.704 1.638	0.663 [†]	0.410 1.072		
2023 × Variable X	0.560	0.217 1.443	0.953 [†]	0.900 1.009	0.825	0.530 1.283	0.806	0.496 1.310		
2024 × Variable X	0.269 [*]	0.075 0.970	0.949	0.873 1.031	1.047	0.497 2.205	0.464	0.174 1.241		

Notes: Only survey years and interactions between survey years and other variables are shown. In the modeling, we controlled for the other variables listed in Table 2. [†] $p < 0.1$, ^{*} $p < 0.05$, ^{***} $p < 0.01$, ^{***} $p < 0.001$.

Abbreviations: OR: Odds ratio; SME: Small and medium-sized enterprises.

Table 4. Discrete-time logit model estimating marriage for women (odds ratios)

Parameter	Variable X that interacted with survey years					
	Regular employment			Annual income		
	OR	95%CI	Lower	Upper	OR	95%CI
Variable X	1.307*	1.066	1.602	1.058***	1.025	1.091
Survey year (ref.: Before 2020)						
2021	0.558*	0.347	0.897	0.787*	0.639	0.971
2022	0.675†	0.432	1.056	0.782*	0.637	0.961
2023	0.961	0.653	1.415	0.737**	0.599	0.908
2024	0.653	0.314	1.356	0.722*	0.527	0.991
Survey year × Variable X (ref.: Before 2020 × Variable X)						
2021 × Variable X	1.628†	0.961	2.758	1.115	0.946	1.313
2022 × Variable X	1.185	0.716	1.961	0.959	0.880	1.045
2023 × Variable X	0.687	0.436	1.084	0.952	0.850	1.066
2024 × Variable X	1.081	0.489	2.386	0.938	0.762	1.154

Notes: Only survey years and interactions between survey years and other variables are shown. In the modeling, we controlled for the other variables listed in Table 2. † $p<0.1$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Abbreviations: OR: Odds ratio; SME: Small and medium-sized enterprises.

Table 5. Discrete-time logit model estimating marriage for men (additional analysis, odds ratios)

Parameter	Variable X that interacted with survey year															
	Regular employment				Annual income				SMEs				Living with parents			
	OR	Lower	Upper	95% CI	OR	Lower	Upper	95% CI	OR	Lower	Upper	95% CI	OR	Lower	Upper	95% CI
Variable X	5.103***	3.235	8.050		1.069***	1.039	1.101		0.950	0.772	1.169		0.561***	0.457	0.688	
Survey year: After COVID-19	1.690†	0.937	3.050		0.882	0.763	1.020		0.884	0.730	1.071		0.984	0.831	1.164	
Survey year: After COVID-19 × Variable X	0.506*	0.275	0.930		1.010	0.964	1.058		1.013	0.763	1.343		0.713*	0.522	0.972	

Notes: Only survey years and interactions between survey years and other variables are shown. In the modeling, we controlled for the other variables listed in Table 2. † $p<0.1$, * $p<0.05$, *** $p<0.001$.

Abbreviations: OR: Odds ratio; SME: Small and medium-sized enterprises.

Table 6. Discrete-time logit models estimating marriage for women (additional analysis, odds ratios)

Parameter	Variable X that interacted with survey year											
	Regular employment			Annual income			SMEs			Living with parents		
	OR	Lower	Upper	OR	Lower	Upper	OR	Lower	Upper	OR	Lower	Upper
Variable X	1.309*	1.067	1.604	1.058***	1.026	1.091	1.010	0.824	1.236	0.614***	0.514	0.734
Survey year: After COVID-19	0.722*	0.549	0.949	0.761***	0.666	0.870	0.826	0.652	1.046	0.825*	0.693	0.984
Survey year: After COVID-19 × Variable X	1.069	0.781	1.463	0.994	0.942	1.048	0.885	0.666	1.176	0.820	0.625	1.075

Notes: Only survey years and interactions between survey years and other variables are shown. In the modeling, we controlled for the other variables listed in Table 2. * $p < 0.05$, *** $p < 0.001$. Abbreviations: OR: Odds ratio; SME: Small and medium-sized enterprises.

in previous studies (Matsuda *et al.*, 2024; Mugiyama, 2024; Piotrowski *et al.*, 2015), but found that this gap narrowed over the pandemic. No significant difference in marriage delay was found by firm size. In other words, although low annual income, non-regular employment, and small firm size all indicate weaker financial standing, only low annual income was associated with marriage delay during the pandemic. With respect to employment status, this pattern may be explained as follows. The COVID-19 pandemic increased workers' feelings of employment insecurity and uncertainty about future career prospects. This affected both regular and non-regular employees; however, those in regular employment, who had previously enjoyed stable employment and clearer career prospects, may have been more strongly affected. In addition, individuals in regular employment were more likely to work from home during the pandemic than those in non-regular employment (Shin & Takenoshita, 2022), which may have contributed to a greater reduction in job-related opportunities for marriage among regular employees. This may also help explain why no difference in marriage delay was observed by firm size; although young people working at smaller firms likely experienced higher employment insecurity than those at large firms, the greater prevalence of telework at large firms may have offset this difference.

Second, Hypothesis 2—that the relationship between weaker financial standing and delayed marriage during the pandemic occurs exclusively among men—was supported. Specifically, the relationship between annual income/employment status and delayed marriage was observed among men but not among women. These findings are consistent with existing theories (Becker, 1981; Blossfeld *et al.*, 2005; Oppenheimer, 1988, 1994), which emphasize that stable employment and high income among young men are key factors in marriage formation. This can be attributed to the strong gendered division of labor in Japanese society, where men are expected to play the role of breadwinner in family life.

Third, given that families often function as emergency support systems during recessions (Cherlin *et al.*, 2013), this study examined the relationship between living with parents and the transition to marriage and found that living with parents delayed marriage among young people during the pandemic. While it has become clear that marriages in Japan have declined significantly during the pandemic (Ghaznavi *et al.*, 2022; Ministry of Health, Labour and Welfare, 2025), this study reveals that this decline was particularly pronounced among men with low incomes, occurred alongside a decrease in the probability of marriage among men in regular employment, and was more pronounced among young people living with their

parents.

This study offers several theoretical contributions to the literature on marriage formation. First, consistent with economic theories of marriage (Becker 1981), economic stability remains a critical precondition for marriage, particularly for men. In societies characterized by strong traditional gender role divisions, the expectation that men serve as primary breadwinners structures union formation. Although Japan has experienced shifts in gender relations—with women's economic participation increasing and men's employment becoming more precarious—our findings indicate that men's economic status remained the primary predictor of getting married during the pandemic. This pattern suggests that gendered breadwinner expectations remain deeply embedded in the institutional and normative foundations of marriage in Japan. Moreover, such expectations may become especially salient during periods of social crisis, when uncertainty heightens the perceived importance of economic security in family formation.

Second, previous research has argued that unmarried young people living with their parents—a common arrangement in East Asian contexts, including Japan—tend to delay marriage because residing with parents may enhance financial security and life satisfaction, thereby reducing psychological readiness for married life (Yamada, 1999; Yu & Kuo, 2016). Our findings extend this perspective by suggesting that, during the pandemic, marriage delay among those living with parents may also reflect intergenerational considerations. Specifically, unmarried individuals may have delayed marriage out of concern about exposing their parents to infection. This implies that theories linking parental co-residence to delayed marriage should also incorporate norms of intergenerational obligation and support that become particularly consequential during periods of health-related crisis.

The following policy implications emerge regarding the social challenges of delayed marriage and low fertility. In Japan, low income and unstable employment among young people have contributed to delayed marriage and declining fertility. This relationship has been observed both before and after the pandemic; moreover, during the pandemic, low income further delayed marriage. Although the gap in the transition to marriage between regular and non-regular employees narrowed after the pandemic, this was driven by a decline in marriage transitions among regular employees, rather than an improvement among non-regular employees. These findings highlight the need to strengthen policies that improve the economic circumstances of young people in response to delayed

marriage and low fertility. Although this study finds that men's economic status is a key determinant of marriage, policy interventions should target both men and women. In the Japanese context, such measures include raising wages for young people, promoting transitions from non-regular to regular employment, and advancing equal pay for equal work. During a pandemic, in addition to infection control measures, robust employment policies targeting young people are essential to prevent the loss of opportunities for family formation. While the findings of this study pertain to Japan, similar policy measures may also be relevant in other East Asian societies with comparable institutional contexts.

The limitations of this study are as follows. The data used in this study were obtained from surveys conducted up to 2024, a period during which economic and social disruption remained substantial. Therefore, analysis of trends after 2025 remains a topic for future research. Moreover, previous studies have shown that men in non-regular employment tend to find partners later than those in regular employment, and also tend to marry later (Mugiyama, 2024). This study could not determine whether the pandemic affected the stage of partner acquisition or the timing of marriage among individuals who already had partners, as the data lacked information on partnership status. Furthermore, this research was conducted with a background in sociology and therefore remains disconnected from insights in other academic fields such as epidemiology. Taking these into account, advancing research on family formation issues during social crises like pandemics is a challenge for us going forward.

5. Conclusion

Japan has experienced a sharp decline in marriage registrations since the COVID-19 pandemic, accompanied by a sharp decrease in the total fertility rate. This study revealed that the association between young people's economic and family situations and their transition to marriage changed either temporarily or continuously from the onset of the COVID-19 pandemic through several subsequent years, compared with the pre-pandemic period. These changes may have curtailed the transition to marriage among low-income men, men in regular employment, and young people living with their parents. The findings indicate that marriage delays following the pandemic did not occur uniformly among young people but varied in magnitude, with some groups experiencing greater delays due to economic conditions and family structure.

This study provides the following suggestions

for academic fields. First, East Asian countries have experienced a sharp decline in fertility since the pandemic. They share several institutional characteristics with Japan, including delayed marriage and a strong linkage between marriage and childbearing. In this context, the findings of this study provide useful insights not only for understanding the Japanese case but also for examining post-pandemic fertility trends in East Asia more broadly. By highlighting how the relationship between young people's socioeconomic circumstances and marriage transitions changed after the pandemic, this study offers a broader perspective on the mechanisms underlying recent family formation patterns in East Asian societies. Second, the relationship between young people's economic circumstances and delayed marriage during this pandemic may vary depending on differences in societal gender equity; in societies with relatively high gender equity—such as Singapore and Taiwan, where female employment rates are high—the economic foundations of both men and women may be related to delayed marriage. Clarifying this point is expected to contribute not only to sociology and demography but also to the advancement of gender studies and related fields. Third, this study suggests to social policy research that during a pandemic, while measures to prevent infection are essential, robust employment policies targeting the younger generation are also required to safeguard their opportunities for family formation.

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Conflict of interest

The authors declare that they have no competing interests.

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Ethics approval and consent to participate

Not applicable.

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Availability of data

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