# First Formal Romantic Unions Among 1st, 2nd, and 2.5 Generations of Immigrant Women in Finland

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## Abstract

Immigrants and their descendants are increasingly forming families across Europe. Yet we know little about how immigrant generation, age at immigration, gender of immigrant parents, and sending region affect first union entry in emerging immigration regimes. Here, we explore how immigration background influenced first union formation for women in Finland from 1987-2020. Using non-immigrant Finns as the reference group (median age at first union 24.09; 95% CI: [24.08-24.10]), in Accelerated Failure Time models, women with one immigrant parent had the most similar ages at first unions (24.24 [24.19-24.30]). Among 1st generation immigrants, those arriving by age 12 formed unions earlier (24.83 [24.74-24.92]) than those arriving at ages 12-18 (25.19 [25.10-25.27]). Second generation immigrants formed unions later (25.14 [25.08-25.20]). Women with Sub-Saharan African or Middle Eastern and North African backgrounds experience union delays by 2-2.5 years compared to Finnish-origin women. These timing differences contribute to our knowledge of how sending and receiving contexts shape a pivotal life course transition that has been shown to affect subsequent socioeconomic outcomes, particularly for immigrant women navigating between cultural contexts.

Keywords: First union, union formation, immigration, immigrant, family dynamics

## Introduction

International migration has reshaped contemporary societies, with the immigrant population in Europe reaching 94 million in 2024 – the highest of any region globally (UN DESA, 2024). As a region, Europe experienced the largest increase globally in the number of international immigrants between 1990 and 2024, accounting for 13% of the total European population by 2024 (UN DESA, 2024).

As receiving societies diversify, new generations of young adults with immigrant backgrounds are beginning family formation across Europe. These individuals, whether they were born in the receiving society or migrated as children, make partnership choices within institutional contexts shaped by both receiving and sending society norms (Balistreri, Joyner, & Kao, 2017; Kulu & González-Ferrer, 2014; Rahnu et al., 2015).

First union formation represents a pivotal life course transition that can shape subsequent demographic and socioeconomic outcomes (Guzzo, 2006). While entry into a union is often positively associated with subjective well-being (Zimmermann & Easterlin, 2006), union entry at an early age can increase dissolution risk (Berrington & Diamond, 1999; Lyngstad & Jalovaara, 2010), and marriage at younger ages is associated with lower labor market participation and educational achievement, especially for women with immigrant backgrounds from less developed regions (Heath, Rothon, & Kilpi, 2008).

First union timing also influences wealth accumulation, social network composition, and pathways to achieving desired family compositions (Haggerty et al., 2023; Saarela & Finnäs, 2014). While research on immigrant family formation has extensively examined marriage patterns, (Adserà & Ferrer, 2015; Gullickson, 2022; Min & Kim, 2009), we know less about first union formation (including both marriage and cohabitation) in contexts with newer immigration regimes and low cohort fertility.

In this paper, we use comprehensive register data to examine whether having any immigration background –i.e. experiencing migration oneself or having at least one immigrant parent– is associated with the timing of entry into first unions, defined as heterosexual cohabiting or marital unions. Taking Finland as a case study, we aim to: (1) analyze first union formation patterns across different immigrant generations; (2) examine how age at arrival shapes first union formation among 1st generation immigrant women[1]; (3) distinguish between children with two immigrant parents (the 2nd generation) and those with one immigrant parent and one non-immigrant parent (the 2.5 generation), which we further differentiate by the gender of the immigrant parent; and (4) investigate how these patterns vary by geographical sending regions (See Figure 1 for definition of immigrant generations).

Our study makes several contributions. First, we use Rumbaut's (2004) work on immigrant life courses to define the immigrant backgrounds we explore. Rumbaut proposed that the age at arrival for immigrants, as well as the constellation of parental immigrant backgrounds (which determine immigrant "generation"), offers insights into the "pace" and "modes" in which socialization and acculturation occur via linguistic acquisition, educational attainment, social (im)mobilty, and identification with varying ethnic identities (Rumbaut, 2004). To capture these socialization experiences and differential institutional exposures, we first disaggregate the 1st generation by age at arrival. First generation immigrants are those whose birth country, and whose parents' birth country, differs from the receiving country (see Figure 1). Given the analytic definition of our sample and sample sizes, we explore the first union dynamics of younger-arriving 1st generation immigrants, who arrive by primary school age (by age 12), and older-arriving 1st generation immigrants, who arrive as adolescents (between ages 12-18).

Second, while data limitations have required previous research to treat children of immigrants as a single group, our use of large-scale register data enables us to distinguish between those with two immigrant parents and those with exogamous parents, further differentiated by the gender of the immigrant parent. This allows us to not only define 2nd generation immigrants as those who were born in Finland to two immigrant parents; we can also define 2.5 generation immigrants— those with one Finnish and one immigrant parent—by the gender of their immigrant parent.

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[1] We use women as the initial index case because their partnership dynamics may have a greater impact on changes in the overall population structure than men's partnership dynamics, given childbearing and co-residence. Throughout this paper we refer to 1st generation women interchangeably as younger or older or as arriving at ages less than 12 or 12-18.

Third, unlike studies limited to marital unions, our data captures entry into both cohabitation and marriage, especially critical given the increasing prevalence of cohabitation (Melby et al., 2006). Additionally, we use the sending region for those with immigrant backgrounds to approximate cultural and social differences from the receiving country. We also explore potential drivers of observed patterns by measuring immigrant access to social networks; likely refugee status; and potential delays of partnering for educational attainment. Finally, by adding in controls that are known characteristics associated with immigration, we further explore whether the trends we observe are due to immigrant selection or are secular trends over time.

## First Union formation Among Immigrant Generations

While immigrants generally form unions later than non-immigrants (Cherlin, 2014; Hannemann & Kulu, 2015; Holland & de Valk, 2013; Pailhé, 2015; Wiik, 2022; Wiik & Holland, 2018), this delay varies significantly by context and ethnic origin (here used interchangeably with country of origin; Elwert, 2020; Hannemann et al., 2020; Kulu & González-Ferrer, 2014). Research examining differences across immigrant generations finds that 2nd generation immigrants typically form unions later than the 1st generation, while the 2.5 generation shows timing patterns between that of 2nd generation immigrants and non-immigrants (Andersson, Obućina, & Scott, 2015; Elwert, 2020; Wiik, 2022).

Existing research on immigrant unions has primarily focused on marriage, particularly exogamous marriages (Çelikaksoy, 2012; Dribe & Lundh, 2008; Wiik, 2022). Cohabitation, however, is a common pathway to first unions (Hannemann et al., 2020; Hannemann & Kulu, 2015; Pailhé, 2015; Sassler, 2020; Wiik, 2022), especially among non-immigrants and the 2.5 generation, although this varies by background. Existing research has primarily focused on 2nd generation immigrants from specific sending regions — in Europe, this often centers on immigrants from Turkey and the Maghreb, as these are locales for some of the largest immigrant-origin groups in Europe, and are communities targeted by European Union research initiatives (Hannemann et al., 2018; Huschek, de Valk, & Liefbroer, 2012; Milewski & Hamel, 2010; Muyan, 2017; Publications Office of the European Union, 2012; van Pottelberge et al., 2021; de Valk & Milewski, 2011).

### Segmented Assimilation

Research comparing union formation patterns between immigrant and non-immigrant populations has identified multiple mechanisms shaping union timing. Age at arrival, exposure to educational systems, employment norms, socioeconomic expectations, and family aspirations in the receiving country influence family formation processes (Kulu & González-Ferrer, 2014; Rumbaut, 2004; Shirpak, Maticka–Tyndale, & Chinichian, 2011). Similarly, characteristics related to the sending country culture and norms play important roles through parental and community influences, cultural distance between sending and receiving regions, and co-ethnic marriage market opportunities (Kulu & González-Ferrer, 2014; Shirpak, Maticka–Tyndale, & Chinichian, 2011). Additionally, immigrating with refugee or asylum status can be characterized

by experiences of forced displacement, trauma, and unique legal and social challenges which can influence union formation through pathways related to mental health, socioeconomic integration, and altered social networks (Borsch et al., 2019; Fazel et al., 2012).

Rather than following a uniform path of convergence toward receiving society practices, these mechanisms tend to produce diverse partnership patterns across immigrant generations and backgrounds which are often country specific. These patterns follow the fundamental tenet of segmented assimilation theory, which proposes that immigrant populations undergo varying, rather than uniform, assimilation in receiving societies, and these trajectories are influenced by a variety of sociocultural mechanisms (Haggerty et al., 2023; Kulu & González-Ferrer, 2014; Portes & Zhou, 1993).

## Receiving Country Influences

Exposure to characteristics of the receiving country, such as the education system, the "symbolic" and "instrumental" importance of linguistic acculturation, government practices, and family structures, can shape familiarity with local partnership norms (Rumbaut, 2004). A major influence in Nordic countries may be the particularly pronounced shifts that are characteristic of the Second Demographic Transition, a secular trend first described by Lesthaeghe and Van de Kaa (1986) (Jalovaara, 2012; Wiik, 2009). The Second Demographic Transition is characterized by reversals in gender gaps in educational attainment, women's increased participation in employment markets, and changing family dynamics including delayed union formation, the deinstitutionalization of marriage, and widespread acceptance of cohabitation as a normative life stage (Lesthaeghe 2010; Lesthaeghe and Van de Kaa 1986).

Higher parental socioeconomic resources often foster greater educational and career ambitions among children of immigrants, which could lead to a delay in union formation (Zhou, 2017). Earlier ages at arrival in the receiving country could also invoke socialization theory, which suggests expectations and attitudes are internalized early in the life course from one's environment; a longer exposure to local partnering norms, expectations about educational attainment, and intergenerational socioeconomic mobility may produce different expectations than shorter exposures (Grusec & Davidov, 2010)

## Sending Country Influences

*Community, Family, and Gender Norms*

In societies dominated by patrilineal structures, partnerships, and especially marriages, often serve as a mechanism for supporting family cohesion and cultural continuity (de Valk et al., 2004). Parents play a substantial role in partner choice and union timing (Willoughby et al., 2012), especially for daughters, whose behavior may be more strictly supervised (Phalet & Schönpflug, 2001; Qvist & Qvist, 2023).

Individuals with backgrounds from more conservative sending regions may be excluded from participating in normative family formation processes in the receiving country as patterns of family formation often vary depending on one's duration in the receiving country and the intensity of cultural gaps (Brown, Van Hook, & Glick, 2008; Muttarak & Heath 2010; Raymo et al., 2015; Scott & Stanfors, 2011). These influences are particularly evident in cases where family formation processes in the receiving country are decoupled from marital institutions (for example, pre-marital cohabitation), which can sharply contrast with some sending country norms that emphasize strong parental influence or religious considerations in partner selection (Elgvin & Grødem, 2011; Esveldt et al., 1995; Lodewijckx & Hendrickx, 1998; van Zantvliet, Kalmijn, & Verbakel, 2014).

*Co-Ethnic Networks & Available Marriage Markets*

The size and composition of co-ethnic networks in Finland varies by sending country and can expand or constrain the pool of potential partners, shape feelings of belonging in the receiving society, and help maintain cultural norms around the appropriate timing and types of unions (Adserà & Ferrer, 2015; Chiswick & Houseworth, 2014). The degree of network embeddedness can be particularly consequential for groups preferring endogamous partnerships, as smaller co-ethnic communities could delay union formation due to limited partner availability (Chiswick & Houseworth, 2011). While larger, more established communities produce denser networks for co-ethnic partner matching and cultural maintenance, newer immigrant groups have smaller populations and therefore more limited co-ethnic marriage markets (Chiswick & Houseworth, 2011; Kalmijn, 1998).

**Refugee Status**

Unlike voluntary immigrants who can plan their moves and often arrive with secured employment or educational opportunities, the precarious nature of refugee status can create additional barriers to union formation (Baauw et al., 2019; Borsch et al., 2019; Fazel et al., 2012; Kocijan-Hercigonja et al., 1998; Mattelin et al., 2024). Refugees have increased in recent years as acute threats have displaced increasing numbers of people, of which over half are estimated to be minors (Fazel et al., 2012; UNHCR, 2021). These disadvantages compound post-migration, which can constrain the ability to initiate a first partnership (Borsch et al., 2019; Mattelin et al, 2024).

## Studying First Union Timing in the Finnish Context

### Significance of first union formation and timing

We focus on first unions as these represent a pivotal step in the life course that can shape subsequent transitions and outcomes (Elder, 1998). Research consistently demonstrates that the timing of first union formation has lasting implications; early formation has been associated with higher dissolution risk (Jalovaara, 2010) and decreased educational attainment among immigrant

women (Thiessen, 2009), while delayed union formation is often associated with higher educational achievement and career development (Wiik & Dommermuth, 2014).

First union formation also influences fertility trajectories – in Finland, approximately 75% of completed fertility is attributed to births within first unions (Andersson, 2023). Further, entering a first union has been shown to sharply accelerate the transition to parenthood in both Sweden and Germany, suggesting that delays in first union formation affect desired family composition (Baizán, Aassve, & Billari, 2004).

**Migration Backgrounds in Finland**

Until the early 1980s, Finland experienced negative net migration, and until the end of the 1980s, immigration was dominated by the return migration of Finnish citizens from Sweden, who had pursued economic opportunities abroad in the 1960s and 1970s (Łobodzińska, 2011). The foreign-born population has since grown rapidly, experiencing a 300 percent increase from 1990 to 2020 (Statistics Finland, 2020).

Initial migration corridors formed with neighboring countries; after Sweden, the largest immigrant populations originated from the former Soviet Union following the fall of the Soviet Union and the Ingrian Finn return program, which returned approximately 30,000 Finnish descendants before its closure in 2016 (Łobodzińska, 2011; Mähönen & Yijälä, 2016). While Vietnamese refugees began to arrive in the late 1970s, the implementation of a refugee quota system in 1985 established more substantial migration inflows, first from Somalia and former Yugoslavia in the 1990s, and later from Iraq and Afghanistan (Heikkilä & Yeasmin, 2021; Kosonen, 2008). Simultaneously, Finland's accession to the European Union in 1995 and to the Schengen area in 2001, followed by the 2004 enlargement of the EU, facilitated an increase in European immigration, particularly from Central and Eastern European countries (Lonsky, 2021).

**Research Questions and Hypotheses**

Our study examines whether the time-to-first-union patterns of women with immigrant backgrounds differ from those of non-immigrant women. We are guided by the following three research questions and their respective hypotheses.

**RQ1**: Do women with and without immigrant backgrounds differ in their timing of first union formation?

Because the Nordics are considered exemplars of the Second Demographic Transition marked by secular attitudes toward family formation (Jalovaara, 2012; Wiik, 2009), we expect non-immigrant women to enter first (non-marital) unions earlier than immigrants. Aligned with segmented assimilation theory, we expect 1st, 2nd, and 2.5 generation women's time-to-first-union formation to be influenced by their varied experiences with, and exposure to, elements of Finland as the receiving society. Accordingly, for the 1st generation we expect age at arrival to

influence first union timing due to differential exposure to receiving country norms and institutions. For the 2nd generation, we expect the navigation between Finnish social norms and the norms of immigrant parents' sending regions to create distinct challenges in partnership formation.

> **H1:** We expect a difference in timing to first union formation between women with and without immigrant backgrounds, with non-immigrant women having the fastest and most frequent entry into first unions compared to immigrant groups.

> **H2:** We expect that the 2nd generation, despite being born in Finland, will likely have the longest time-to-first-union, as they navigate between Finnish society and their parents' cultural expectations.

> **H3**: Among the 1st generation, we expect that those arriving at younger ages will exhibit first union patterns closer to non-immigrant Finns.

**RQ2**: Do children of immigrants experience similar patterns in time-to-first-unions based on whether one (2.5 generation) parent or both (2nd generation) parents are an immigrant? For the 2.5 generation, do these patterns vary by the gender of the immigrant parent?

Having one Finnish parent may provide access to different Finnish cultural and social resources compared to having two immigrant parents. Consequently, we expect that the 2.5 generation will experience first union timing closer to non-immigrant women than the 2nd generation, reflecting increased social and cultural capital in the form of access to Finnish socio-cultural norms.

Given mothers' typically greater involvement in child-rearing (McBride & Mills, 1993; Yeung et al., 2001), we also expect to observe differences in first union timing among the 2.5 generation.

> **H4**: We expect the 2.5 generation to experience first union timings that are closer to non-immigrant Finnish women than the 2nd generation.

> **H5**: Among the 2.5 generation, we expect women with immigrant fathers and Finnish mothers to have first union patterns more similar to non-immigrant Finns compared to those with immigrant mothers and Finnish fathers.

Finally, we include sending regions in our analysis to examine how cultural proximity or distance along family formation norms may generate different trajectories for union formations. We expect sending regions to influence first union formation patterns through three key mechanisms: historical migration ties, prevalence of refugee migration, and cultural distance to Finland. Women from regions of origin with stronger historical ties to Finland may benefit from larger, more established co-ethnic communities that facilitate partnership opportunities, while those from regions with a higher prevalence of refugee migration may face acculturation challenges and mental health stressors that negatively impact partnership prospects. Sweden and countries in and around the former Soviet Union represent Finland's main historical immigration corridors.

When considering cultural distance, we refer to differences in family formation norms, including variations in individualist versus kin-oriented family systems where parental influence may be more prevalent in selecting a partner, (Elgvin & Grødem, 2011; Esveldt et al., 1995; Lodewijckx & Hendrickx, 1998; van Zantvliet, Kalmijn, & Verbakel, 2014) and where there may be differences in secularism versus traditionalism. Based on categorizations in the Inglehart-Welzel World Cultural Map (2023), we consider the following regions to be the most culturally distant from Finland: the Middle East and North Africa, East Asia and the Pacific, South Asia, and Sub-Saharan Africa.

**RQ3:** Does a women's sending region alter the time-to-first-unions to Finnish women?

> **H6**: We expect women from regions of origin with stronger historical ties to Finland to have more similar first union patterns to non-immigrant women than those without historical ties.

> **H7**: We expect women from regions of origin with larger cultural distance to Finland as well as those with a high likelihood of refugee status will have more divergent first union patterns than non-immigrant women.

## Data and Methods

### Data Source

To generate the analytic sample for our analyses, we began by taking all women who were aged 18 years at the end of the calendar year between the years 1987-2020 in the Finnish register data (over 19 million person-years, see Appendix 1). We then follow them to either their first union or age 51 (the oldest age reached by women who entered the sample at age 18 in 1987), and right censor individuals who emigrate or experience death. We begin at age 18 to ensure that women had experienced their *first* cohabiting and/or marital union while in our sample. To see how we arrived at our final sample, please refer to Figure 2.

Our final sample consists of 6,187,256 person–years contributed by 918,062 unique women. Of these individual women, 95.7% (879,004) are non-immigrant Finnish, 1.7% (15,160) are 2nd generation women, 1.1% (9,893) are 2.5 generation women with immigrant mothers, 0.4% (3,393) are 2.5 generation women with immigrant fathers, 0.6% (5,077) are 1st generation immigrants who arrived under the ages of 12, and 0.6% (5,535) are 1st generation immigrants who arrived age 12-18. A total of 665,292 women entered a cohabiting or marital union with a male partner during the observation period (72.5% of the original sample—this ranges from 37.6% among 2nd generation women to 73.7% among non-immigrant Finnish women).

### Outcome: First Union Formation

We measured heterosexual first unions[2], including non-marital cohabitation and marriage for all women in the analytic sample. Cohabitation is assigned by Statistics Finland using the POSSLQ (people of the opposite sex sharing living quarters) method, commonly used in register data from Sweden, Norway, and Finland (Jalovaara & Kulu, 2018). We measured time-to-first-union from age 18 until the year of observed women's (1) first recorded cohabitation or marriage in the register data[3], (2) their death or emigration, or (3) the final year of observation, 2020, whichever came first.

*Marriage vs Cohabitation*

Of first unions formed by women in our sample, 39% (258,804) involve marriage. A minority of these women (6% of all first unions, 20% of all marriages) marry their partner at or prior to cohabiting. However, because the number of marriages occurring before the start of cohabitation is relatively small, we do not differentiate between marriages and non-marital cohabitations as outcomes in this analysis.

**Explanatory Variables**

*Immigration Background*

We matched individual women with their biological parents through unique identifiers generated by Statistics Finland. To categorize women into immigration backgrounds by generation (see Figure 1), we first defined the countries that women's parents were born in as well as the observed woman's country of birth (See Figure 1 for details of immigration background coding).

[Set Figure 1 about here: Immigrant Origin Categorizations]

*Sending Region*

We developed a variable defining the sending region for each individual woman as a proxy measure for socio-cultural background. Due to Finland's historical migration patterns, we have sufficient sample sizes to examine Sweden separately; for other countries, we assign ten additional regions. Based on historical immigration corridors and data availability, we first designate a sending region of the Former Soviet Union. Then we use World Bank (2024) regional designations to define the remaining regions: Eastern Europe, North/South/West Europe, Latin America and the Caribbean (LACS), North America, East Asia and the Pacific, South Asia, Oceania, the Middle East and North Africa (MENA), and Sub–Saharan Africa.

For women with non-immigrant backgrounds, we selected Finland as the sending region. For the 2.5 generation, we selected the sending region for the country of birth of the 1st generation

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[2] We restrict the study to heterosexual data due to Statistics Finland only imputing cohabitations for heterosexual couples.

[3] This definition of "union" underestimates formation of romantic relationships as it is measuring heterosexual unions via imputed cohabitation or registered marriage.

immigrant parent – here we default to the mother's information unless the woman has been coded as having a Finnish mother and immigrant father.

**Covariates**

We included the following demographic and immigration-specific controls in the analysis: five-year birth cohorts, rural/urban residence in the year prior to first union, highest educational attainment in the year prior to first union, likely refugee status, and co-residence in the same municipality as neither, both, or one parent in the year prior to first union (see Appendix 4 for definitional criteria of included covariates).

Because we collapse the data and use a parametric framework for analysis, rather than generating spells for each combination of covariates, we lag all time-varying variables to take the value reached in the year before the observed event. This helps us ensure that educational attainment, a move to or from a city, or changing to or from living in the same municipality as parents precede union formation prior to the event of a first union and the magnitude of influence these processes may have on the outcome. For those who do not enter into a union, we take the value prior to their exit.

**Methods**

We begin by describing the distribution of women's characteristics in our sampled data by immigrant background (see Table 1). To demonstrate how the observed population changed in composition over time, we also graph the number of women from each immigration background and sending region group over the selected birth years (see Figures 2.a and 2.b).

[Set Figure 2 about here: Trends over birth cohorts]

In our main analysis, we use Accelerated Failure Time (AFT) models to generate the median predicted time-to-first-union by our main explanatory variables, building separate models for predicting time-to-first-union by both immigration background and sending region (See Appendix 2 for description of AFT specifications).

Our first model uses immigration background as the primary predictor while our second model uses the sending region as the primary predictor. It is not possible to include both immigration background and the sending region in a single model as the non-immigrant Finnish group is perfectly colinear with all other groups. For each model, we run a baseline specification, predicting time-to-first-union using only the explanatory variable. In the fully adjusted model, we include demographic controls (educational attainment, birth cohort, and rural/urban residence) and immigration-specific controls (likely refugee status and living in the same municipality as parents). We report the predicted median age at first union by immigration background and sending region (separate models, see Tables 2.a and 2.b and Figures 3.a and 3.b) as well as reporting the time ratio coefficients in Appendix 3.

When we report the median age at first union, the covariate values (not shown) are averaged across the observed values rather than using a fixed value, like the mean or median[4]. This translates to computing the average marginal effect of the specified values of a variable (here, either immigration background or sending region) across the sample while accounting for the specific values of the covariates observed in the data[5] (See Appendix 2 for explanation of time ratios),

## Results

### Background Characteristics

Figure 2 shows the growth of women with immigrant backgrounds in Finland in our sample over the birth years 1974-1999, for both absolute and proportional changes. While Europeans consistently made up most immigrants throughout this period, the largest proportional increases occurred among those with origins in East Asia and the Pacific, MENA, and Sub-Saharan Africa. In our earliest five-year birth cohort, non-immigrant Finns represent 99.2% of the sample population, declining to 90% by the final birth cohort, with a significant shift towards 2.5 and 2nd generation women. The composition of birth cohorts varies by region of origin, occurring alongside global trends of expanded female education and urbanization.

[Set Table 1 about here: Analytic Sample Background Characteristics]

Table 1 describes key demographic and immigration characteristics by immigrant background. The most notable difference between non-immigrant Finns and women with immigrant backgrounds appears in their age distribution and representation across birth cohorts. Non-immigrant Finns are distributed relatively evenly across five-year birth cohorts (except for the partially censored cohort from 1999-2002), while 2.5 generation women with immigrant mothers, 2nd generation women, and younger-arriving 1st generation women are disproportionately concentrated in later cohorts. Women with an immigrant father show cohort patterns more similar to non-immigrant Finns, while older-arriving 1st generation women are more heavily represented in the 1989-1998 birth years.

For all immigrant background groups except older-arriving 1st generation women, the median education was secondary or tertiary school attainment prior to entering a first union. The older - arriving1st generation immigrants had a much higher percentage of completing only primary school prior to entering a first union (62.8%). Women with any immigrant background also completed less university or graduate education than non-immigrant Finns.

While likely refugee status was uncommon across all immigrant groups, older-arriving 1st generation and 2nd generation women had substantially higher proportions (26.5% and 17.3%

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[4] Using the asobserved default option for the margins command in Stata 18.0.
[5] We tested alternative specifications with group-specific interactions for covariates, however given our focus on the main research questions, the minimal improvement in model fit, and the significant computational demands, we present results from the more parsimonious models.

respectively) compared to other immigrant women (<6%). Notably, more than half of women with backgrounds from Sub-Saharan Africa were categorized with refugee status, making them the only regional group with such a high proportion.

Compared to 56.7% of non-immigrant Finns, older-arriving 1st generation women overwhelmingly lived in a different municipality from any parents (96%) prior to first union formation. Second generation women show higher urban residence rates (97% vs 85% for non-immigrant Finns and 89% for 2.5 generation women) and a greater likelihood of living in the same municipality as both parents (57% vs. 12-35%). We consider this variable to measure potential parental involvement in lifestyle choices, particularly influence over partner choice. Women with an immigrant father from the 2.5 generation and 1st generation women are more likely to live in the same municipality as one parent (37%-44% vs. 13%) than non-immigrant Finns.

Though we cannot include interaction terms between immigration background and sending region in our models, the breakdown of sending regions of origin by immigration background provides insights into the composition of different groups. First generation immigrants, regardless of their age at arrival, predominantly come from the Former Soviet Union (47-49%). Both groups of 2.5 generation women primarily have regional backgrounds from Sweden (40%). The largest sending region for 2nd generation women is the Former Soviet Union (35%); however, this group exhibits more diversity in sending regions than the others. Secondary sending regions for 1st generation and 2nd generation women include MENA, East Africa and the Pacific, and Sub-Saharan Africa.

**Time-to-First-Unions & Median Age at First Unions**

*Immigration Backgrounds*

In our fully adjusted model, we observe selection effects on the included covariates only for 2nd generation women compared to our unadjusted model (see Appendix 3 tables). Further tests (not shown) demonstrate that the inclusion of the covariates for rural/urban residence, likely refugee status, and living in the same municipality as parents account for the selection effect among 2nd generation women. For all other immigrant backgrounds, the coefficients increase from the unadjusted to adjusted models (suppressor effect), suggesting that the demographic and immigration covariates unmask variation that is unobserved in the basic model, making the relationship between immigration background and time-to-first-union clearer.

Our first research question asked whether women with any immigrant background have different first union patterns than non-immigrant women in Finland. We find support for H1: all women with any immigration background experience statistically significantly longer times to first unions than non-immigrant Finns. In the adjusted model, we find that non-immigrant Finnish women enter a first union at a median age of 24.09; all other women's median age at first union is significantly older than this (see Table 2.a and Figure 3.a).

We find partial support for H2, which hypothesized that 2nd generation women had the longest time-to-first-union formation. Those experiencing the longest delays include both older-arriving 1st generation women with an increase of 18% (95% CI: 17%-19%), and the 2nd generation women with an increase of 17% (95% CI: 16-18%) (see Appendix 3). This translates to a 13-month delay compared to non-immigrant Finns.

We also find support for H3, which hypothesized that earlier arrival times would lead to shorter times to first union formation. The younger-arriving 1st generation—those arriving before age 12 are observed to have a 12.1% longer duration to first unions compared to non-immigrant Finns (95% CI: 11%-14%). This is in comparison to older-arriving 1st generation immigrants (arriving between ages 12-18) who have an 18% longer duration (95% CI: 17%-19%; see Figure 3.A & Appendix 3). This increase translates to a 4-month difference between the younger- and older-arriving 1st generation groups (median ages 24.83 vs. 25.19), and a 9-12-month delay compared to non-immigrant Finns (see Table 2.A and Figure 3.A).

[Set Table 2.a and Figure 3.a about here: Generalized Gamma (AFT) model]

Our second research question asked whether having one or two immigrant parents influences time-to-first-unions. We find clear support for H4; having one non-immigrant parent brings 2.5 generation women closer to the first union dynamics of non-immigrant Finns than having two immigrant parents. Specifically, compared to the 13-month delay observed for 2nd generation women, the 2.5 generations with immigrant fathers experience only a 6-month delay, and the 2.5 generation with immigrant mothers show just a 2-month delay relative to non-immigrant Finns. Thus, we do not find support for H5, which hypothesized that 2.5 generation women with immigrant fathers and Finnish mothers would have closer first union timing to non-immigrant women compared to the 2.5 generation with immigrant mothers. Instead, we see the opposite result; the median predicted age at first union for women with an immigrant mother is 24.24, while it is 24.57 for women with an immigrant father.

We include several important covariates in our models. All women except the older-arriving 1st generation have a median educational attainment of secondary school, and non-immigrant and any 2nd generation women have the highest levels of university or graduate schooling. In our adjusted models, completing secondary school increases the duration to first union by 74% (95% CI: 73%-74%, see Appendix 3). Women who have completed a bachelor's degree have a 393% increase in the duration to first union (95% CI: 392%-394%), and women who have any graduate education have a 509% increase (95% CI: 506%-511%) (see Appendix 3). This translates into a 10-plus year delay for women with any university education.

The differences in timing among children of immigrants are marginally related to the much higher proportion of 2nd generation women who reside in urban areas. Our model shows that rural residence accelerates time-to-first-union by 9% (95% CI: 8%-9%, see Appendix 3), and 11% of women of any 2.5 generation reside in rural areas compared to only 3% of 2nd generation women (see Table 1 & Appendix 3). Living in the same municipality as only one parent delays

union formation by 3% (95% CI: 3%-3%); across the 2nd generation, women with immigrant fathers are disproportionately represented in this group, which partially accounts for the longer duration to first union compared to 2.5 generation women with immigrant mothers (see Appendix 3).

Finally, our adjusted model demonstrates that likely refugee status delays first union timing. Women with a likely refugee background have a 14% delay in the time-to-first-union (95% CI: 12-15%) (see Appendix 3). Compared to refugees in the 1st generation group, 2nd generation women with a refugee background were more likely to be from the Democratic Republic of Congo, Iraq, Somalia, and the Former Yugoslavia; older-arriving 1st generation women with a refugee background came from Vietnam.

*Sending Regions*

Whereas our first set of results captures the dynamics of how women's immigrant generation influences time-to-first-unions in the Finnish context, our second set of results examines the influence of sending region on first unions. Our third research question asked whether a woman's sending region alters her time-to-first-union relative to Finnish-origin women. We find that most sending regions result in significantly longer times to first unions for immigrant women compared to Finnish-origin women, with varying magnitudes of delay.

We find partial support for H6, which hypothesized that women with regions of origin with stronger historical ties to Finland, including Sweden and the Former Soviet Union, would have more similar first union patterns to non-immigrant women than those from regions without such ties. In Figure 3.b, we see in the adjusted model that women with Swedish origins have no statistical difference in time-to-first-unions compared to Finnish-origin women. Women from the Former Soviet Union, however, have statistically longer durations to first unions, and these durations are more similar to women from other parts of Europe than they are to Finnish or Swedish-origin women (8.3% increased duration, 95% CI: 8%-9%, see Figure 3.b).

We find strong support for H7, which hypothesized more divergent first union timing among women with origins in culturally distant regions from Finland and among those with a higher likelihood of refugee status. These culturally distant regions included: East Asia and the Pacific, South Asia, the Middle East and North Africa (MENA), and Sub-Saharan Africa. Women from all of these regions had the longest durations to first unions compared to other regions. However, the magnitude of delay stands out for MENA and Sub-Saharan Africa, while the coefficients for East Asia and the Pacific and South Asia are more similar to other included regions (see Figure 3.b).

Finnish-origin women have a median age at first union of 24.09 (95% CI: 24.08-24.10, see Table 2.b). Compared to this reference age, women from other parts of Europe (not including Sweden or the Former Soviet Union), Oceania, and Latin America and the Caribbean (LACS), have an 8-11-month delay in time-to-first-union formation (see Figure 3.b). Women with origins in East

Asia and the Pacific have a median age at first union of 25.02 (95% CI: 24.91-25.12), equivalent to the upper-end 11-month delay found in other regions. Women with origins in South Asia experienced a 14-month delay compared to Finnish-origin women, though the confidence interval for South Asian-origin median age at first union was not distinct from four other regions in the same range (see Figure 3.b).

The largest delays appear among women with origins in MENA and Sub-Saharan Africa. Women with origins in MENA had 36.5% increased time-to-first-unions compared to women with Finnish backgrounds (95% CI: 34%-39%, see Appendix 3). This translates to a median age at first union of 26.3 (95% CI: 26.18-26.45)—a delay of 27 months compared to women with Finnish-origins, and 13 months more than women with South Asian origins, see Table 2.b and Figure 3.b.

Women with origins in Sub-Saharan Africa had a 38.4% (95% CI: 36%-41%) increase in the duration to first union—the largest increase of any time ratio coefficient—and a median age at first union of 26.4 (95% CI: 26.27-26.59). This translates into a 28-month longer duration to first union than women of Finnish-origin. Likely refugee status appears particularly influential for this group, as Sub-Saharan African women are the only group where over half have a high likelihood of being a refugee. While the other covariates remain largely similar across models, the magnitude of the refugee coefficient declines from a 13.8% increased duration in the immigrant background model to a 5% increased duration in the sending region model, suggesting that one or more of the sending regions absorbs some of the variation from this coefficient.

## Discussion

**The Generational Gradient: The Role of Immigration Characteristics for Family Formation Processes**

Traditionally, the 1st generation is perceived as the most culturally distinct from the non-immigrant population, with expectations of slower integration and higher degrees of cultural preservation (Algan, Bisin, & Verdier, 2012). This study reveals a more nuanced narrative: we find different paths over time and generations to various levels of convergence towards the non-immigrant Finnish duration to first-unions, i.e., support for strong segmented assimilation with limited support for childhood socialization effects. In a scenario without segmented assimilation or weak segmented assimilation, we would expect to find a convergence to the non-immigrant Finnish coefficients across generations of women (Pailhé, 2015; Portes & Zhou, 1993). Instead, we find highly heterogeneous associations across generations which can be partially explained by both receiving and sending society factors.

Our results indicate a clear gradient in first union timing. The 2.5 generation with immigrant mothers form unions earliest among immigrant-background women, just 2 months later than non-immigrant women. These are followed by 2.5 generation women with an immigrant father, who form unions 6 months later than non-immigrant women. This difference in timing by

parental gender composition suggests potential variation in cultural transmission processes. While this may suggest that Finnish fathers in exogamous relationships have greater influence over the family formation dynamics of their daughters than Finnish mothers in exogamous relationships do, it may alternatively be related to characteristics of the Finnish men and women who select into exogamous marriages and differences in sending region by parental gender composition.

Following the 2.5 generations, 1st generation women who arrived before the age of 12 have the first union entry time with a 9-month delay compared to non-immigrant women. These women exhibit some degree of socialization—i.e., where expectations and attitudes, including those about family formation, are internalized in the early life course (Grusec & Davidov, 2010). Their earlier age at arrival in Finland translates into a more similar time to first union than for women who arrive at later ages.

The most delayed immigrant background groups are both the 2nd generation and older-arriving 1st generation who arrived in Finland between ages 12 and 18. Both groups experience a 13-month delay in the median age at first union relative to non-immigrant Finnish women. This partially aligns with existing evidence that suggests 2nd generation women generally form the latest unions but diverges in that 1st generation women are represented in this category as well (Andersson, Obućina, & Scott, 2015; Elwert, 2020; Wiik, 2022).

First unions can be considered an entry point into adulthood, family formation, and other major life transitions. The 13-month delay experienced by 2nd generation and older-arriving 1st generation women is one-third of the median duration between entering a cohabiting partnership and transitioning to marriage within this sample (3 years), suggesting that this is a non-trivial amount of time to delay a first union. The timing and nature of these unions can therefore have lasting effects. It will be important in the future to better investigate whether this delay is arithmetic—moving all family formation processes later on a linear scale or whether they are compounded—delaying each subsequent transition further, until potentially some life course goals become unattainable.

 While the 2nd generation may have more access to "Finnish" cultural norms than their parents, their 2nd generation status could translate into more diffuse ethno-cultural ties to their parents' region of origin and to Finnish society (Giguère, Lalonde, & Lou, 2010; Jacquet, 2023; Portes, Fernández-Kelly, & Haller, 2009). In comparison, the 2.5 generation may have more access to cultural and social capital, with a Finnish parent and extended family who can facilitate opportunities for schooling, employment, networking, and even normative dating culture (Behtoui, 2010; Zhou, 2019). This social capital may help explain why the 2.5 generation experiences shorter delays in first union formation than the 2nd generation, which nay lead to potential disparities in inclusion and partnering dynamics (Giguère, Lalonde, & Lou, 2010; Jacquet, 2023; Portes, Fernández-Kelly, & Haller, 2009).

It is important to note that delays in first union formation are not inherently negative. As reviewed early on in this paper, early union formation can be associated with a greater risk of union dissolution and weaker attachment to educational institutions and labor markets, particularly for immigrant women (Berrington & Diamond,1999; Heath, Rothon, & Kilpi, 2008; Lyngstad & Jalovaara, 2010). However, the pattern of delays we observe suggest they may represent "unrealized" unions rather than strategic postponement as the gradient of durations is linked to acculturation to the receiving society by generation, gender of immigrant parents, and age at arrival. This is further evidenced by the modest mediation effects seen in our models. Including known immigration mediator variables, like education, inflate our coefficients rather than explain the variation. This suggests that the differences between immigration background groups are more likely to be related to other unmeasured factors rather than socioeconomic ones. If this is the case, it is more likely that immigrant women experience delays due to disadvantage in the Finnish context.

**Cultural Similarities & Cultural Distance**

The characteristics of the Second Demographic Transition that are observed in the Finnish context would imply that sending regions or immigrant backgrounds with the greatest cultural similarities for education and female employment would have the most similar first union patterns to non-immigrant Finns. From our results, we see that the sending countries that share borders with Finland—Sweden and countries from the Former Soviet Union—have time-to-first-union values that are most similar to those from Finland.

Conversely, regions most culturally distant from Finland appear to have the most divergent partnering trends. Women coming from South Asia, MENA, and Sub-Saharan Africa have the longest durations to first unions compared to women originating in Finland, ranging from a delay of 1 year and 2 months in South Asia to 2 years and 4 months in Sub-Saharan Africa. As mentioned above, if these are indeed "unrealized" unions, then these have substantial impacts on family life course trajectories. For example, recent work by Tønnessen & Mussino (2020) suggests that immigrant women who delay partnerships compress childbearing into shorter intervals to achieve desired family sizes, leading to potential health and family formation complications.

We know from our first model that 2nd generation women experience one of the greatest increases in time-to-first-unions of any women with immigrant backgrounds. We also know from our second model that having origins in MENA or Sub-Saharan Africa leads to large increases in time-to-first-unions. Women in both these groups tend to be more likely to be a refugee, more urban, and younger than non-immigrant Finnish women. Within Finland, women from these regions rank at the bottom for overall rates of marriage occurring after cohabitation but rank higher among those who marry prior to cohabiting, suggesting that the type of first union may be another fruitful avenue of study to disaggregate immigrant backgrounds on.

While our models explain some variation in union formation timing, there remain unexplained differences that point to additional mechanisms at work. One framework that could be tested in future studies would be colorism—a system of social stratification based on skin tone and phenotypic features (Hunter, 2007). Partner markets may be shaped by hierarchical preferences that favor Eurocentric appearances, potentially constraining partnership opportunities for women whose visible features mark them as racial or ethnic minorities (Jablonski, 2021). As race and ethnicity are not measured in Nordic registers, this would require new work that makes use of surveys or qualitative research. This dynamic may be particularly salient for women from regions where phenotypic differences intersect with cultural markers of difference, such as religious dress - generating compounded experiences of othering in intimate relationship formation (Slimani, 2021). Along these lines, Finnish registers do not track religions outside of Lutheranism or Russian Orthodoxy, although religious affiliation may be particularly relevant for understanding the family formation patterns of immigrant populations in Europe (Pailhé, 2015).

**Methodological Considerations**

This study has several key limitations that warrant discussion. The reliance on register data restricts our analysis to recorded unions and excludes relationships formed abroad or outside official documentation. By focusing on women who appear in Finnish registers by age 18 without prior unions, we necessarily exclude certain populations. This particularly affects 1st generation immigrants who arrive later in life, as we cannot otherwise be sure we are observing their first formalized union. This method also restricts us to those unions that can be observed via formal registration. Many people engage in relationships without cohabiting or marriage, however, register data is incompatible with capturing these relationships. We argue that cohabitation indicates a greater level of relationship institutionalization, which likely indicates stronger intentions to maintain the relationship and engage in subsequent family processes. Additionally, cohabitation is only inferred by Statistics Finland for heterosexual couples, which underestimates total unions. This study also excludes undocumented immigrants.

Key contextual information remains unobservable in the data, including reasons for migration, religious practices, and languages spoken at home. Religion would likely help explain some of the variation observed in our study, suggesting that our results may be biased upwards. Religion may help to proximately measure cultural distance, in that European Lutheranism or secularism, the primary practices in Finland, prioritize individuality, while religions from more distal cultures may promote communalism or other traditions. Similarly, understanding the language(s) spoken at home could help proximately measure cultural integration into Finnish culture, both as an instrumental tool to navigate society and as a symbol of acculturation.

**Conclusion**

Our study reveals a clear generational gradient in union formation timing among immigrant-background women in Finland. This pattern challenges linear assimilation theories that predict greatest divergence among the 1st generation. Our findings align with segmented assimilation

theory, suggesting that pathways to inclusion are shaped by interactions between exposure to receiving society institutions, socioeconomic resources, and cultural differences. The similar delays observed in 2nd generation and older-arriving 1st generation women and those observed among women from cultural distant regions, raise important questions about their implications for subsequent family formation processes, particularly childbearing timing and completed fertility.

Our analyses indicate that both immigration generation and sending region independently influence first union formation timing, suggesting multiple factors at work beyond simple cultural assimilation. The differential timing observed between the 2.5 generations speaks to the role of parental composition in shaping family formation patterns. Further research is needed to understand the mechanisms through which these parental dynamics operate, including how immigrant-non-immigrant parent dyads may differently influence their daughters' partnership decisions. The differential access to social networks and cultural capital among these subgroups of children of immigrants warrants targeted analysis to identify mechanisms driving these timing differences and their implications for subsequent family formation processes.

Our study contributes to the emerging literature on immigrant family formation. First, by utilizing comprehensive register data spanning over three decades, we provide robust evidence on the diversity of first union formation patterns across immigrant generations in Finland. Second, our separation of immigrant background and sending region effects provides insights into how cultural distance co-shapes family formation with generational status. Finally, our findings challenge conventional assumptions about the integration advantages of growing up in receiving countries by demonstrating that 2nd generation women have similar delays in time-to-first-unions as older-arriving 1st generation women.

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## Figures & Tables
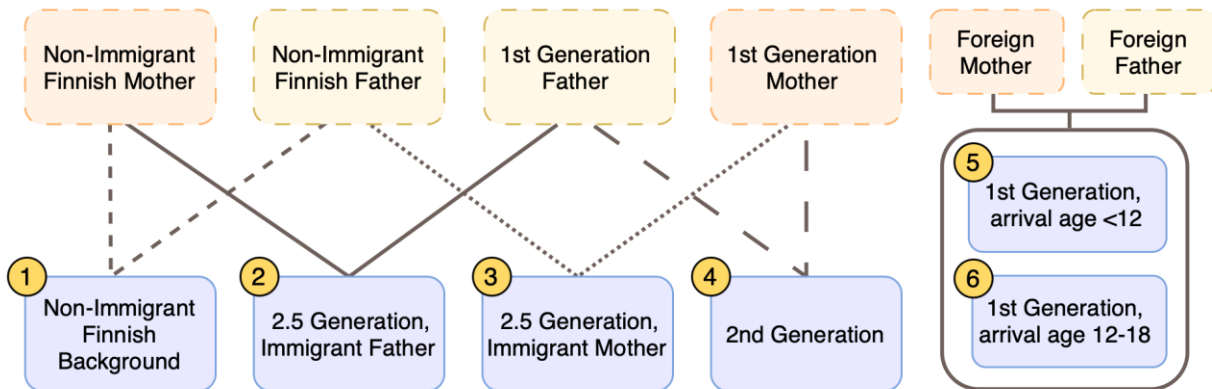


**Figure 1:** Immigrant Background Categorizations. Categories are numbered 1-6 (left to right): (1) Non-immigrant Finnish background – those with two non-immigrant Finnish-born parents; (2, 3) the 2.5 generation – those with either one immigrant father or one immigrant mother; (4) The 2nd generation – those born in Finland to two 1st generation parents who immigrated to Finland; and (5-6) those who immigration themselves, further disaggregated by arrival age. Categorizations are based on (first) mother's place of birth and Finnish-origin status, followed by paternal status and then the status reported by the individual, depending on which information is available. Light boxes with dashed borders indicate parents and blue numbered boxes indicate the final categories used in analysis. Based on generational classifications from Rumbaut & Komaie (2010). We code immigrant background and sending region by the birth country of the observed woman's mother, unless that women has been defined as having a non-immigrant Finnish mother and an immigrant father. If the mother's birth country is not available, then we use the father's birth country. If both parents' birth countries are missing, we use the woman's own birth country. For women with non-immigrant backgrounds, we select Finland as the sending region

**Figure 2.a**
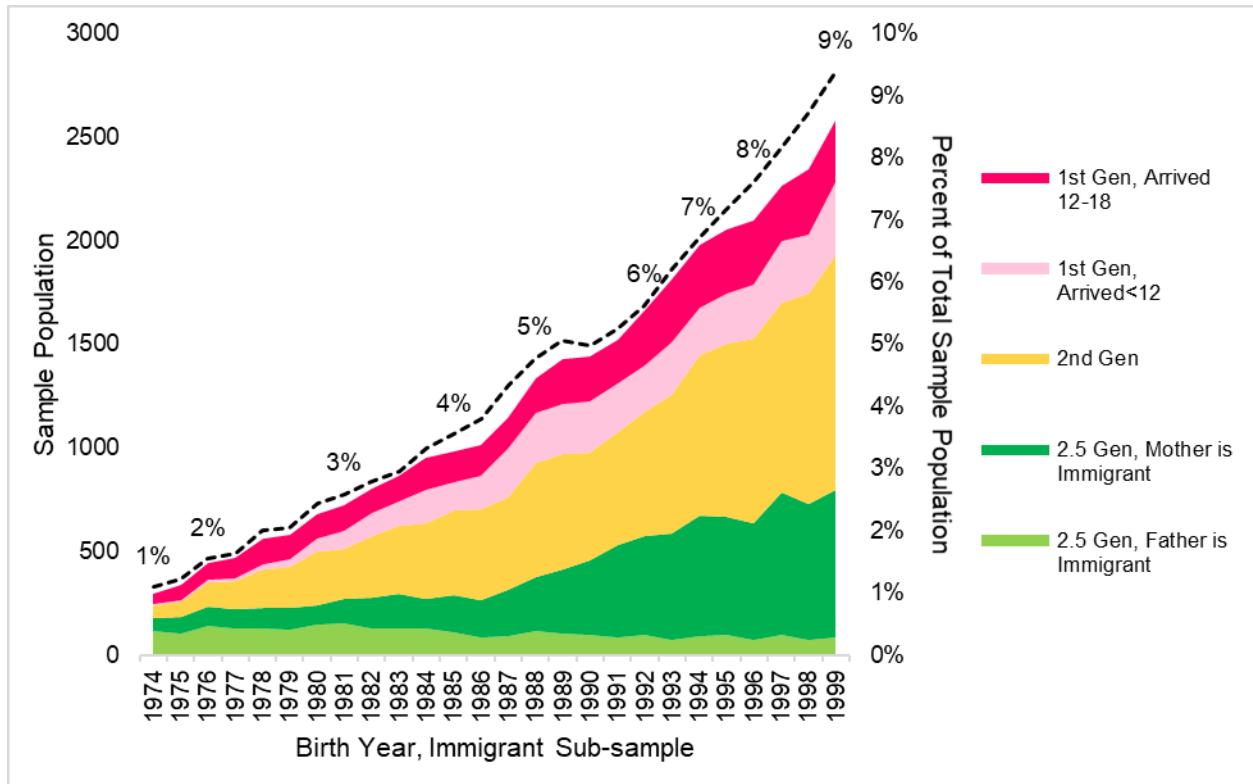
**Figure 2.b**
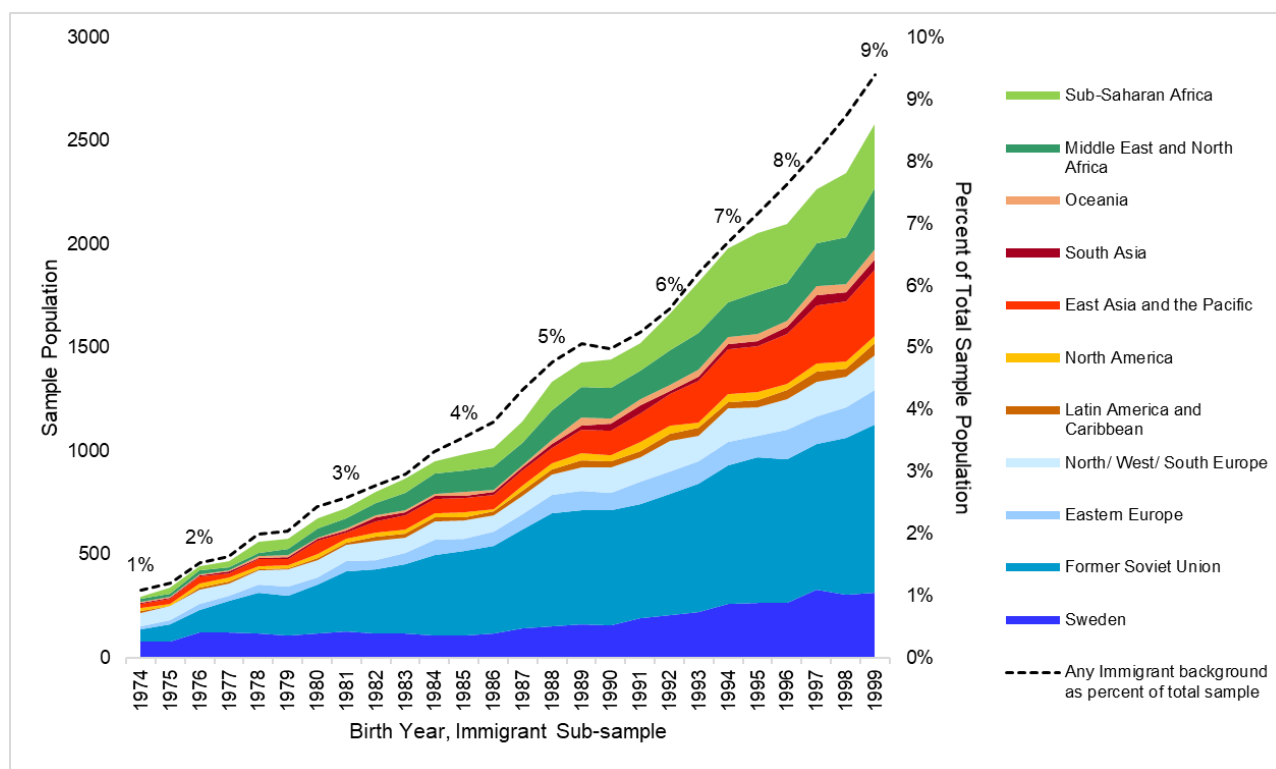


**Figure 2:** Trends over birth years representing full cohorts. Sample immigrant population over birth years1974-1999, by immigration background (Panel A) and sending region (Panel B). Note that birth years prior to 1974 and after 1999 are not shown because they partially represent union cohorts due to definition of analytic sample.

**Figure 3.a**



Predicted Median Age at First Union, by Immigation Background
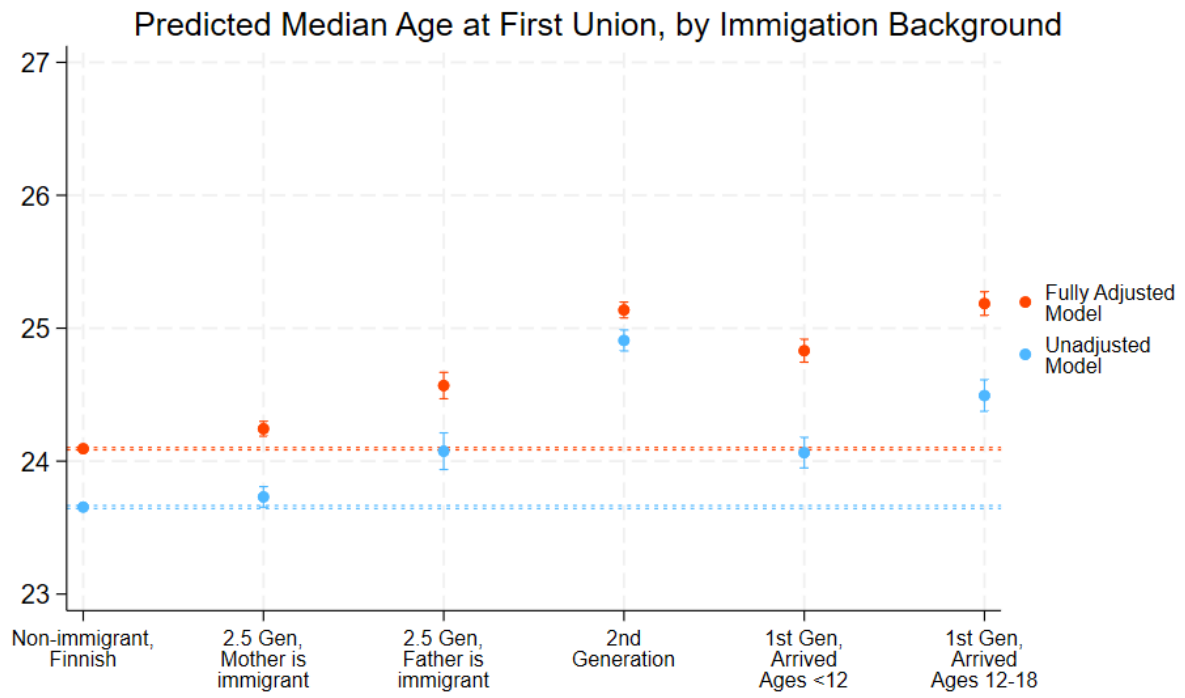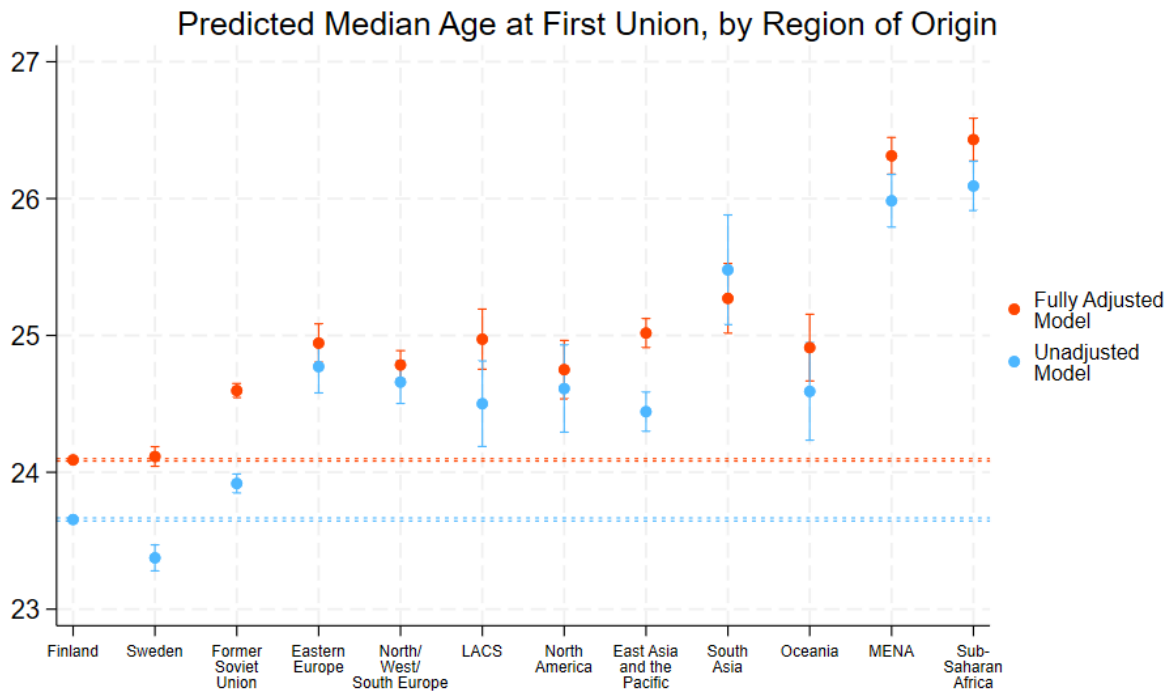
**Figure 3.b**



**Figure 3:** Generalized Gamma (AFT) Model, Predicted Median Years to First Union from Age 18, plotted by immigration background (Panel A) and sending region (Panel B) for time-to-first-union. The exponentiated coefficients are plotted with 95% confidence intervals.

**Table 1:** Distribution of main variables, unique individuals.

Analytic Sample Background Characteristics

| N= 918,135 | Non-immigrant Finn | 2.5 Generation, Mother is Immigrant | 2.5 Generation, Father is Immigrant | 2nd Generation | 1st Generation, Arrived Ages <12 | 1st Generation, Arrived Ages 12-18 |
|---|---|---|---|---|---|---|
| | N (% column) | | | | | |
| **Age** | | | | | | |
| 18-19 | 126,494 (14.4%) | 1,950 (19.7%) | 504 (14.9%) | 2,650 (17.5%) | 966 (19.0%) | 903 (16.3%) |
| 20-24 | 465,543 (53.0%) | 5,577 (56.4%) | 1,612 (47.5%) | 8,523 (56.2%) | 2,736 (53.9%) | 3.021 (54.6%) |
| 25-29 | 181,634 (20.7%) | 1,722 (17.4%) | 716 (21.1%) | 2,777 (18.3%) | 940 (18.5%) | 1,087 (19.6%) |
| 30-34 | 55,688 (6.3%) | 420 (4.2%) | 294 (8.7%) | 844 (5.8%) | 336 (6.6%) | 339 (6.1%) |
| 35-39 | 23,637 (2.7%) | 131 (1.3%) | 127 (3.7%) | 274 (1.8%) | 86 (1.7%) | 110 (2.0%) |
| 40-44 | 13,275 (1.5%) | 54 (0.5%) | 77 (2.3%) | 73 (0.5%) | 12 (0.2%) | 59 (1.1%) |
| 45-51 | 12,733 (1.4%) | 39 (0.4%) | 63 (1.9%) | 19 (0.1%) | 0 (0.0%) | 16 (0.3%) |
| **Residence** | | | | | | |
| Urban | 743,114 (84.5%) | 8,834 (89.3%) | 3,027 (89.2%) | 14,743 (97.3%) | 4,813 (94.8%) | 5,247 (94.8%) |
| Rural | 135,890 (15.5%) | 1,059 (10.7%) | 366 (10.8%) | 417 (2.8%) | 264 (5.2%) | 288 (5.2%) |
| **Birth Cohort** | | | | | | |
| 1969-1973 | 130,657 (14.9%) | 378 (3.8%) | 448 (13.2%) | 124 (0.8%) | 12 (0.2%) | 98 (1.8%) |
| 1974-1978 | 138,127 (15.7%) | 434 (4.4%) | 607 (17.9%) | 580 (3.8%) | 56 (1.1%) | 428 (7.7%) |
| 1979-1983 | 138,386 (15.7%) | 630 (6.4%) | 673 (19.8%) | 1,323 (8.7%) | 420 (8.3%) | 603 (10.9%) |
| 1984-1988 | 132,039 (15.0%) | 988 (10.0%) | 524 (15.4%) | 2,211 (14.6%) | 936 (18.4%) | 769 (13.9%) |
| 1989-1993 | 137,000 (15.6%) | 2,110 (21.3%) | 447 (13.2%) | 2,895 (19.1%) | 1,192 (23.5%) | 1,225 (22.1%) |
| 1994-1998 | 129,640 (14.8%) | 3,069 (31.0%) | 424 (12.5%) | 4,434 (29.3%) | 1,308 (25.8%) | 1,505 (27.2%) |
| 1999-2002 | 73,155 (8.3%) | 2,284 (23.1%) | 270 (8.0%) | 3,593 (23.7%) | 1,153 (22.7%) | 907 (16.4%) |
| **Educational Attainment** | | | | | | |
| Primary | 224,057 (25.5%) | 3,485 (35.2%) | 1,309 (38.6%) | 6,926 (45.7%) | 2,455 (48.4%) | 3,478 (62.8%) |
| Secondary or tertiary | 535,567 (60.9%) | 5,576 (56.4%) | 1,753 (51.7%) | 7,156 (47.2%) | 2,343 (46.2%) | 1,712 (30.9%) |
| Bachelors | 78,456 (8.9%) | 598 (6.0%) | 212 (6.3%) | 810 (5.3%) | 209 (4.1%) | 288 (5.2%) |
| Any Graduate | 40,924 (4.7%) | 234 (2.4%) | 119 (3.5%) | 268 (1.8%) | 70 (1.4%) | 57 (1.0%) |
| **Shared Municipality Immediately prior to Union formation** | | | | | | |
| Not in same municipality | 479,426 (54.5%) | 4,565 (46.1%) | 1,715 (50.6%) | 4,322 (28.5%) | 2,331 (45.9%) | 3,000 (54.2%) |
| Same municipality as both parents | 286,341 (32.6%) | 3,492 (35.3%) | 411 (12.1%) | 8,653 (57.1%) | 619 (12.2%) | 103 (1.9%) |
| Same municipality one parent | 111,237 (12.9%) | 1,836 (18.5%) | 1,267 (37.3%) | 2,185 (14.4%) | 2.127 (41.9%) | 2,432 (43.9%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Likely Refugee background | 0 (0.0%) | 45 (0.5%) | 10 (0.3%) | 3,906 (25.8%) | 455 (8.9%) | 988 (17.8%) |
| **Sending Region of Origin** | | | | | | |
| Finland | 879,004 (100.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Sweden | 0 (0.0%) | 3,905 (39.5%) | 1,319 (38.9%) | 297 (2.0%) | 61 (1.2%) | 40 (0.7%) |
| Former Soviet Union | 0 (0.0%) | 2,780 (28.1%) | 49 (0.9%) | 5,323 (35.1%) | 2,504 (49.3%) | 2,603 (47.0%) |
| Eastern Europe | 0 (0.0%) | 308 (3.1%) | 30 (0.9%) | 1,736 (11.5%) | 178 (3.5%) | 137 (2.5%) |
| North/ West/ South Europe | 0 (0.0%) | 1,007 (10.2%) | 1,307 (38.5%) | 752 (5.0%) | 126 (2.5%) | 141 (2.6%) |
| Latin America & Caribbean | 0 (0.0%) | 295 (3.0%) | 66 (2.0%) | 71 (0.5%) | 275 (5.4%) | 102 (1.8%) |
| North America | 0 (0.0%) | 404 (4.1%) | 261 (7.7%) | 54 (0.4%) | 22 (0.4%) | 38 (0.7%) |
| East Asia & the Pacific | 0 (0.0%) | 579 (5.9%) | 42 (1.2%) | 1,493 (9.8%) | 897 (17.7%) | 778 (14.1%) |
| South Asia | 0 (0.0%) | 40 (0.4%) | 32 (0.9%) | 429 (2.8%) | 141 (2.8%) | 51 (0.9%) |
| Oceania | 0 (0.0%) | 343 (3.5%) | 73 (2.2%) | 89 (0.6%) | 59 (1.2%) | 73 (1.3%) |
| Middle East & N. Africa | 0 (0.0%) | 122 (1.2%) | 166 (4.9%) | 2,667 (17.6%) | 214 (4.2%) | 478 (8.6%) |
| Sub-Saharan Africa | 0 (0.0%) | 110 (1.1%) | 48 (1.4%) | 2,249 (14.8%) | 600 (11.8%) | 1,094 (19.8%) |
| N (%) | 879,004 (100%) | 9,893 (100%) | 3,393 (100%) | 15,160 (100%) | 5,077 (100%) | 5,535 (100%) |

**Table 2.a**

Predicted Median Age at First Union, by Immigration Background

|  | Unadjusted Model | Fully Adjusted Model (as observed) |
|---|---|---|
| Non-Immigrant Finnish (*Reference*) | 23.66 | 24.09 |
|  | (23.64—23.67) | (24.08—24.10) |
| 2.5 Gen, mother is immigrant | 23.73 | 24.24 |
|  | (23.65—23.81) | (24.19—24.30) |
| 2.5 Gen, father is immigrant | 24.07 | 24.57 |
|  | (23.94—24.21) | (24.47—24.67) |
| 2nd Gen | 24.91 | 25.14 |
|  | (24.83—24.99) | (25.08—25.20) |
| 1st Gen, arrived <12 | 24.06 | 24.83 |
|  | (23.95—24.18) | (24.74—24.92) |
| 1st Gen, arrived 12-18 | 24.49 | 25.19 |
|  | (24.37—24.61) | (25.10—25.27) |
| N (Person-Years) | 6,187,256 | |
| N (observations) | 918,062 | |

**Table 2.b:** Predicted Median Age at First Union, by Sending Region

Predicted Median Age at First Union, by Sending Region

| | Unadjusted Model | Fully Adjusted Model |
|---|---|---|
| Finland (*Reference*) | 23.66 | 24.09 |
| | (23.64—23.67) | (24.08—24.10) |
| Sweden | 23.38 | 24.12 |
| | (23.28—23.47) | (24.04—24.19) |
| Former Soviet Union | 23.92 | 24.60 |
| | (23.85—23.99) | (24.55—24.65) |
| Eastern Europe | 24.77 | 24.94 |
| | (24.58—24.96) | (24.80—25.08) |
| North/ West/ South Europe | 24.66 | 24.78 |
| | (24.50—24.82) | (24.68—24.89) |
| Latin America and Caribbean | 24.50 | 24.97 |
| | (24.19—24.81) | (24.75—25.19) |
| North America | 24.61 | 24.75 |
| | (24.29—24.93) | (24.53—24.96) |
| East Asia & the Pacific | 24.44 | 25.02 |
| | (24.30—24.59) | (24.91—25.12) |
| South Asia | 25.48 | 25.27 |
| | (25.08—25.88) | (25.01—25.53) |
| Oceania | 24.59 | 24.91 |
| | (24.24—24.95) | (24.67—25.16) |
| Middle East & North Africa | 25.98 | 26.31 |
| | (25.79—26.18) | (26.18—26.45) |
| Sub-Saharan Africa | 26.09 | 26.43 |
| | (25.91—26.27) | (26.27—26.59) |
| N (Person-Years) | 6,187,256 | |
| N (observations) | 918,062 | |

**Table 2:** Predicted Median Age at First Union. Table 2.a gives results by immigration background and Table 2b gives results by sending region

## Appendices
### Appendix 1: Sample Selection.



Original Sample: All women aged <51 in Finnish register data from 1987-2020 (n=36,592,683 Person Years (PY))

↓

Sample after removing women first observed over age 18 (n=31,019,988 PY)

↓

Sample after removing Person Years occurring AFTER first union formation (n=19,435,284 PY)

↓

Sample after removing women not single at age 18 (n=18,172,250 PY)

↓

Sample after keeping only person-years observed over age 18 (n=6,247,192 PY)

↓

Sample after removing women unable to identify immigration background (n=6,245,128 PY)

↓

Sample after removing women with missing covariates (n=6,187,256 PY)

↓

Final Analytic Sample: **6,187,256 PY** representing **918,062 unique women**

**Appendix 2: Accelerated Failure Time and the Generalized Gamma Distribution**

AFTs are fully parameterized maximum likelihood survival models. In our analyses, we tested a selection of AFT specifications and found the best-fit model to be the generalized gamma distribution, which uses three ancillary parameters to define the scale, shape, and location of the predicted model. The general functional form, description of the generalized gamma distribution, and AIC and BIC model fit test results for our unadjusted and fully adjusted models for different AFT distributions can be found below Cleves Gould & Marchenko, 2016; Incerti, 2019).

| Model 1.c: Full Model | DF | AIC | BIC |
|---|---|---|---|
| Exponential | 19 | 2,033,784 | 2,034,007 |
| Weibull | 20 | 1,861,340 | 1,861,574 |
| Gompertz | 20 | 2,016,314 | 2,016,549 |
| Lognormal | 20 | 1,549,689 | 1,549,923 |
| Loglogistic | 20 | 1,525,994 | 1,526,229 |
| Generalized gamma | 21 | 1,350,315 | 1,350,562 |

| Model 1.a-1.c: Immigration Background | DF | AIC | BIC |
|---|---|---|---|
| Unadjusted Generalized gamma | 8 | 1,819,935 | 1,820,029 |
| Fully Adjusted Generalized gamma | 21 | 1,350,315 | 1,350,562 |

Time ratios are the output of exponentiated gamma-distributed AFT models. These should be interpreted as the multiplicative change in the median time to the event under observation, for example, a time ratio of 1.05 indicates that the median time-to-first-union is 1.05 times longer, or has a 5% longer duration, while a time ratio of 0.95 indicates that the median time-to-first-union is 0.95 times shorter or has a 5% shorter duration.

After testing different AFT distribution specifications, we found that the best-fit model was the extremely flexible generalized gamma distribution, which incorporates three ancillary parameters that define the scale ($\sigma$), shape ($\kappa$), and location ($\mu$) of the predicted model.

The general form of AFT models follows the specification laid out in Equation 1, where $T$ is the time to event, $X$ is a vector of covariates, $\beta$ is a vector of regression coefficients, $W$ is a random error term that follows a specific distribution and $\sigma$ is a scale parameter.

$$\log(T) = X\beta + \sigma W \qquad \textbf{(Equation 1)}$$

The Generalized Gamma distribution is a continuous probability distribution that introduces additional flexibility by incorporating 3 ancillary parameters that define the location (sometimes given as $\mu$ in the distribution equation, taken from the effects of the covariates), the scale ($\sigma$), and a shape ($\kappa$), which controls the distribution's skewness). This can be represented in an extremely generalized format in the following way:

$$\log(\boldsymbol{T_i}) = \boldsymbol{X_i\beta} + \boldsymbol{\sigma Z_i} \qquad \text{(Equation 2)}$$

where $\boldsymbol{Z_i}$ follows a standardized Generalized Gamma distribution whose skewedness is characterized by the value of $\boldsymbol{\kappa}$.

The survival function for a generalized gamma distribution is extremely complex, and is often derived as the complement of the cumulative distribution function:

$$S(t) = 1 - F\left(\frac{\log(t)-\boldsymbol{X\beta}}{\sigma}, \kappa\right) \qquad \text{(Equation 3)}$$

where $F(\circ)$ is the Cumulative Distribution Function of the Generalized Gamma distribution.

To obtain the Cumulative Distribution Function, $F(\circ)$, we first transform the time variable, $t$, using the log transformation:

$$Z = \frac{\log(t)-\boldsymbol{X\beta}}{\sigma} \qquad \text{(Equation 4)}$$

Then, the Generalized Gamma Distribution is given by:

$$F(Z,\kappa) = \int_{0}^{e^{\kappa Z}} \frac{x^{\left(\frac{1}{\kappa^2}\right)-1} e^{-x}}{\Gamma\left(\frac{1}{\kappa^2}\right)} dx \qquad \text{(Equation 5)}$$

Where $\Gamma(\circ)$ is the Gamma function, the integral represents the incomplete gamma function, which should be computed using statistical software, and $\kappa$ is the shape parameter.

The hazard function (h(t)), which describes the instantaneous rate of event occurrence is similarly derived from the probability density function and the survival function S(t).

When kappa is equal to 1, the Generalized Gamma distribution simplifies to a Weibull distribution, when kappa=0, the model approaches a Log-Normal distribution, and when kappa=2 the model simplifies to a Gamma distribution.

Because AFT models are parameterized in log time, their interpretation is different than that of a proportional hazards model. Where a proportional hazard model hazard ratio greater than 1 would indicate in increased likelihood of that event occurring, an AFT coefficient less than 0 indicates reduced time to the event of interest. If the AFT coefficients are exponentiated to time ratios, then values less than 1 indicate reduced time to the event.

(Incerti, 2019; Stacy, 1962)

## Appendix 3: Multivariate Analysis Tables

**a.** Accelerated Failure Time (AFT) Model Coefficients for time-to-first-union, by Immigration Background.

| Immigration Background | Unadjusted Model | Fully Adjusted Model |
|---|---|---|
| Non-Immigrant Finnish (*Reference*) | -- | -- |
| 2.5 Gen, mother is immigrant | 1.013 | 1.025*** |
| | (1.00—1.03) | (1.02—1.03) |
| 2.5 Gen, father is immigrant | 1.074*** | 1.078*** |
| | (1.05—1.10) | (1.06—1.09) |
| 2nd Gen | 1.222*** | 1.171*** |
| | (1.21—1.24) | (1.16—1.18) |
| 1st Gen, arrived <12 | 1.072*** | 1.121*** |
| | (1.05—1.09) | (1.11—1.14) |
| 1st Gen, arrived 12-18 | 1.148*** | 1.180*** |
| | (1.13—1.17) | (1.17—1.19) |
| Educational Attainment: Primary (*Reference*) | -- | -- |
| Secondary or Tertiary | -- | 1.735*** |
| | | (1.73—1.74) |
| Bachelor's Degree | -- | 3.931*** |
| | | (3.92—3.94) |
| Any Graduate | -- | 5.088*** |
| | | (5.06—5.11) |
| Birth Cohort: 1969-1973 (*Reference*) | -- | -- |
| 1974-1978 | -- | 0.971*** |
| | | (0.97—0.97) |
| 1979-1983 | -- | 0.960*** |
| | | (0.96—0.96) |
| 1984-1988 | -- | 0.985*** |
| | | (0.98—0.99) |
| 1989-1993 | -- | 0.983*** |
| | | (0.98—0.99) |
| 1994-1998 | -- | 1.012*** |
| | | (1.01—1.02) |
| 1999-2002 | -- | 1.054*** |
| | | (1.05—1.06) |
| Residence: Urban (*Reference*) | -- | -- |
| Rural | -- | 0.913*** |
| | | (0.91—0.92) |
| Shared Municipality: No (*Reference*) | -- | -- |
| Both Parents | -- | 0.988*** |
| | | (0.99—0.99) |
| One parent | -- | 1.031*** |

|  |  |  |
|---|---|---|
|  |  | (1.03—1.03) |
| Likely Refugee: No (*Reference*) | -- | -- |
| Refugee | -- | 1.138*** |
|  |  | (1.12—1.15) |
| Constant | 4.071*** | 2.511*** |
|  | (4.06—4.09) | (2.50—2.52) |
| ln(sigma) | -0.419 | -0.833 |
| kappa | -1.295 | -1.563 |
| sigma | 0.658 | 0.435 |
| N (Person-Years) | 6,187,256 | |
| N (observations) | 918,026 | |

P-values-*p<.05,-**p<.01,-***p<.001

**b.** Accelerated Failure Time (AFT) Model Coefficients for time-to-first-union, by Sending Region.

| Sending Region | Unadjusted Model | Fully Adjusted Model |
|---|---|---|
| Finland (*Reference*) | -- | -- |
| Sweden | 0.950*** | 1.004 |
| | (0.93—0.97) | (0.99—1.01) |
| Former Soviet Union | 1.047*** | 1.083*** |
| | (1.03—1.06) | (1.08—1.09) |
| Eastern Europe | 1.198*** | 1.140*** |
| | (1.16—1.23) | (1.12—1.13) |
| Northern, Western, Southern Europe | 1.178*** | 1.114*** |
| | (1.15—1.21) | (1.10—1.13) |
| Latin America & the Caribbean | 1.150*** | 1.145*** |
| | (1.10—1.21) | (1.11—1.18) |
| North America | 1.169*** | 1.108*** |
| | (1.11—1.23) | (1.07—1.14) |
| East Asia & the Pacific | 1.139*** | 1.152*** |
| | (1.11—1.16) | (1.14—1.17) |
| South Asia | 1.323*** | 1.194*** |
| | (1.25—1.40) | (1.15—1.24) |
| Oceania | 1.166*** | 1.135*** |
| | (1.10—1.23) | (1.10—1.18) |
| Middle East & North Africa | 1.412*** | 1.365*** |
| | (1.38—1.45) | (1.34—1.39) |
| Sub-Saharan Africa | 1.431*** | 1.384*** |
| | (1.40—1.46) | (1.36—1.41) |
| Educational Attainment: Primary (*Reference*) | -- | -- |
| Secondary or Tertiary | -- | 1.736*** |
| | | (1.73—1.74) |
| Bachelor's Degree | -- | 3.932*** |
| | | (3.92—3.95) |
| Any Graduate | -- | 5.085*** |
| | | (5.06—5.11) |
| Birth Cohort: 1969-1973 (*Reference*) | -- | -- |
| 1974-1978 | -- | 0.971*** |
| | | (0.97—0.98) |
| 1979-1983 | -- | 0.960*** |
| | | (0.96—0.96) |
| 1984-1988 | -- | 0.985*** |
| | | (0.98—0.99) |
| 1989-1993 | -- | 0.983*** |
| | | (0.98—0.99) |
| 1994-1998 | -- | 1.012*** |

| | | |
|---|---|---|
| | | (1.01—1.02) |
| 1999-2002 | -- | 1.053*** |
| | | (1.05—1.06) |
| Residence: Urban (*Reference*) | -- | -- |
| Rural | -- | 0.913*** |
| | | (0.91—0.92) |
| Shared Municipality: No (*Reference*) | -- | -- |
| Both Parents | -- | 0.987*** |
| | | (0.99—0.99) |
| One parent | -- | 1.032*** |
| | | (1.03—1.03) |
| Likely Refugee: No (*Reference*) | -- | -- |
| Refugee | -- | 1.050*** |
| | | (1.03—1.07) |
| Constant | 4.076*** | 2.512*** |
| | (4.06—4.09) | (2.50—2.52) |
| ln(sigma) | -0.418 | -0.832 |
| kappa | -1.291 | -1.561 |
| sigma | 0.658 | 0.435 |
| N (Person-Years) | 6,187,256 | |
| N (observations) | 918,062 | |

P-values-*p<.05,-**p<.01,-***p<.001

**Appendix 4: Definitions of Included Covariates**

Here we provide a detailed account of how each of our variables was constructed in the models we show. This register data captures complete data on every registered resident in Finland and their country of birth and does not suffer from reporting bias or nonresponse (Rahnu & Jalovaara, 2022). It is also one of the longest-running register datasets that captures information on non-marital cohabitation in addition to marriage. We limit our sample to women who were born between 1969 and 2002 so that they can be age 18 at entering the sample. We remove any women who have experienced a first union prior to age 18, any women who enter the sample after age 18, and women whose immigration background could not be identified or whose information on covariates was missing.

To measure demographic characteristics related to immigration, we create a categorical variable measuring five year birth cohorts: 1969–1973,1974–1978, 1979-1983, 1984–1988, 1989–1993, 1994–1998, 1999–2002.

We also include a measure of the highest educational attainment obtained in the year prior to experiencing an event or prior to exiting the sample. These include includes values for completed primary, completed secondary or tertiary, completed bachelor's, or any graduate level education.

Co-residence in the same municipality as one or both parents is generated by identifying whether the municipal code for the woman under observation matches the municipal codes for both parents (where available), one parent, or neither parent in the year prior to first union. We use living in the same municipality as parents as a measure to assess the influence of parental or community networks on the individual's union transition.

The rural-urban residence measure is based on the code provided by Statistics Finland for each municipality; in cases where the municipality is coded as both rural and urban for different individuals, we assign the municipality to a rural or urban designation according to the value with the larger population.

Highest education, rural/urban residence, and co-residence with parents are time-varying covariates, they are thus all coded for the value of the year prior (t-1) to experiencing an event or exiting the sample

Finally, we include a binary indicator of likely refugee status determined by the birth country and year of immigration reported for each woman, as the reason for migration is not available in the data. We coded individuals from countries as "high likelihood of refugees" based on the predominant humanitarian crises occurring during the years our birth cohorts were born[6]; to be even more precise with this measure, we apply this designation to women only if they migrated

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[6] These countries include Myanmar, DRC, Eritrea, Palestine, Iraq, Libya, Rwanda, Vietnam, Somalia, Sudan, South Sudan, Syria, Venezuela, Yemen, and former Yugoslavia.

during the primary years of these humanitarian crises. There are likely many additional asylum seekers in addition to 'regular' immigrants from locales like Turkey and Morocco, however, we are unable to separate out their status in this dataset. This approach, while imperfect, follows previous research using sending country characteristics to make informed estimations about likely refugee status (Gibson-Helm et al. 2014).