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Forced Migration and the Childbearing of Women and Men: A Disruption of the Tempo and Quantum of Fertility?

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ABSTRACT It is well known that migrant fertility is associated with age at migration, but little is known about this relationship for forced migrants. We study an example of displacement in which the entire population of Finnish Karelia was forced to move elsewhere in Finland in the 1940s. This displacement was unique because of its size and scale, because we have data on almost the whole population of both men and women who moved, and because of the similarity between origin and destination. These aspects enable us to investigate the disruptive impact of forced migration, net of other factors such as adaptation and selection. For all ages at migration from one to 20, female forced migrants had lower levels of completed fertility than similar women born in present-day Finland, which suggests a permanent impact of migration. However, women born in the same year as the initial forced migration showed no difference, which may indicate the presence of a counterbalancing fertility-increasing effect, as observed elsewhere for people born during a humanitarian crisis. There is less evidence of an impact for men, which suggests a gendered impact of forced migration—and its timing—on fertility. Results are similar after controlling for social and spatial mobility, indicating that there may be no major trade-off between reproduction and these forms of mobility.

KEYWORDS Fertility • Forced migration • Disruption • Finland • Karelia

Introduction

The number of refugees and internally displaced people across the globe has continued to increase over the last few decades (Castles et al. 2013; Livi Bacci 2012; Massey et al. 2005). Presently, more than 70 million persons have been forced to move from their homes. Many of these are international migrants, but the majority become "internally displaced" and remain in their country of origin (UNHCR 2019). Forced displacement has been shown to have not only short-term consequences (Fiddian-Qasmiyeh et al. 2014), such as humanitarian needs (Busetta et al. 2019; UNHCR et al. 2013; UNICEF 2014), but also long-term consequences, such as effects on health and psychological well-being (Cetorelli et al. 2017; Crepet et al. 2017; Sangalang and Vang 2017). This literature shows that forced migrants are at

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serious risk of experiencing disadvantage, and it remains the case many years after their initial displacement.

It is important to understand the consequences of forced migration, not least because it enables governments, international agencies, and nongovernmental organizations to manage efforts to safeguard lives and protect social welfare (Black 1994; Fiddian-Qasmiyeh et al. 2014). Moreover, knowledge about the long-term effects of forced migration is imperative for predicting the ways in which people's lives are likely to change beyond their immediate humanitarian needs (Ager and Strang 2008; Anders et al. 2018; Bansak et al. 2018; Bevelander and Pendakur 2014; Strang and Ager 2010). Despite a considerable number of studies examining the extended impacts of forced migration, most research has focused on health (Hermans et al. 2017; Mendola and Busetta 2018; Saarela and Elo 2016; Ziersch and Due 2018), mortality (Bauer et al. 2019; Haukka et al. 2017; Saarela and Elo 2016; Saarela and Finnäs 2009), or labor market outcomes (Bevelander 1999; Hainmueller et al. 2016; Marbach et al. 2018). Few studies have examined forced migrants' family dynamics over the long run, including outcomes relating to fertility. This is an important gap because the transition to parenthood is well known to impact life course trajectories. Becoming a parent at an early age, for example, is detrimental for education and labor market outcomes (Goisis and Sigle-Rushton 2014; Hobcraft and Kiernan 2001; Kahn et al. 2014). Additionally, there is an increasing amount of evidence that early childbearing has a more negative impact for women than men (Cohen et al. 2011; Dribe and Stanfors 2009; Nisén et al. 2018), with recent research showing that this is also the case for immigrants and their descendants, including refugees (Wilson et al. 2019).

There is a long-standing debate about the extent to which migration affects fertility (Milewski 2010). One of the most common findings has been that the average number of children born to migrants is elevated immediately after arrival in a new destination (Andersson 2004; Mussino and Strozza 2012; Robards and Berrington 2016; Toulemon 2006). Several explanations have been proposed. The selection hypothesis argues that migrants' fertility will be determined by the fact that they are selectively different from nonmigrants, particularly in their childbearing prior to migration (Goldstein and Goldstein 1982; Harbison and Weishaar 1981; Hervitz 1985; Kahn 1988). For example, people with children may be less likely to migrate, or the childless may be more likely to migrate, which would imply a reverse causal link between migration and fertility (Toulemon 2006). Another explanation—which may or may not occur alongside reverse causality—is that childbearing is disrupted by migration (Goldstein and Goldstein 1982; Hervitz 1985; Stephen and Bean 1992). This disruption may be caused by the psychological stress of the move (Goldstein and Goldstein 1982), the separation of partners (Menken 1979), or the anticipation of the move (Ford 1990), leading people to postpone childbirth or partnership formation (Milewski 2010). Given that partnership formation is strongly associated with becoming a parent (Balbo et al. 2012), this has led some to propose an interrelation of events hypothesis, which typically refers to partnership formation as a key mechanism that determines migrant fertility (Milewski 2007; Singley and Landale 1998). A further explanation is adaptation, sometimes called straight-line assimilation, which predicts that migrant fertility will become increasingly like the fertility of the native-born population over time (Farber and Lee 1984; Harbison and Weishaar 1981).

In studies of nonrefugee migrants, researchers often claim to have found evidence of adaptation, selection, and disruption (Milewski 2010); however, these hypotheses

are hard to disentangle empirically. Changes in fertility after arrival, such as elevated birth rates, may be because of adaptation, selection, or disruption—or any combination of these (Hoem 2013). Because data and research designs are often too limited to discount competing explanations, it is difficult to falsify these hypotheses (Wilson and Sigle-Rushton 2014).

To move beyond this impasse, it is important to understand the role of age at migration—not only as a key determinant of fertility, but also as a means of generating new insights about theories of migrant fertility (Adserà and Ferrer 2014; Adserà et al. 2012; Mussino et al. 2021). By focusing on age at arrival for children who migrate prior to childbearing age, one can minimize the likelihood that selection and reverse causality will impact fertility. Evidence for Canada, England and Wales, France, and Sweden suggests that child migrants have fertility levels more similar to the destination or native-born average if they arrive as infants rather than as teenagers (Adserà et al. 2012; Mussino et al. 2021). There is little evidence about the link between age at migration and fertility for forced migrants. Based on studies of conflict and fertility, it can be predicted that the timing of forced migration is more likely to have a short-term impact on (the timing of) births rather than a long-term impact on completed fertility (Hill 2004). However, despite a considerable literature on fertility in humanitarian crises, relatively few studies on forced migration and fertility exist (Agadjanian 2018; Avogo and Agadjanian 2008; Lynch et al. 2019; Randall 2005; Saarela and Skirbekk 2019; Verwimp et al. 2020; Verwimp and Van Bavel 2005; Williams et al. 2013), and none appear to have focused on the link between age at migration and fertility, or on the differences between short- and long-term effects.

Several theories can help predict how the timing of forced migration may play a role in determining childbearing. Increased levels of trauma may have a scarring effect on the desire to form a family (Agadjanian 2018; Rumbaut and Weeks 1986), but scarring may also depend on the age at which trauma is first experienced or has an impact on migration. In addition, early-childhood trauma has been found to impact outcomes such as health (Doblhammer et al. 2013; Qi 2017), which may mediate fertility. At the same time, age at forced migration may determine the strength of exposure to mechanisms that can interrupt fertility, such as economic hardship, housing shortages, and separation from partners (Randall 2005). This process may be different for women and men, not least because experiences of integration and resettlement after migration are highly gendered (Fiddian-Qasmiyeh 2014; Pedraza 1991; Randall 2005; Stepputat and Sørensen 2014).

In this study, we undertake a comprehensive examination of the link between age at forced migration and fertility. Our study context provides an excellent scope for disentangling migrant fertility hypotheses. We focus on an example of displacement in which the entire population of Finnish Karelia was forced to move to other areas of Finland following Soviet annexation in the 1940s. This context is advantageous because of the similarity between origin and destination, which allows us to investigate the disruptive impact of forced migration largely without other factors that could influence migrant fertility. In particular, adaptation likely plays a negligible role because of the similarity between origin and destination, and selection into migration plays a smaller role than in other contexts because of the exogenous nature of the move and the fact that the entire origin population was forced to migrate.

Our study also has the advantage of being able to make use of detailed microdata for an entire population of more than a million individuals. By contrast, studies that

have used survey data from more recent examples of forced migration are based on several thousand individuals (Verwimp et al. 2020; Verwimp and Van Bavel 2005). It seems reasonable to assume that the impact of forced migration on fertility will depend on the nature of the forced displacement (Hill 2004). With this in mind, we nevertheless note that—despite its occurrence more than fifty years ago (which is requisite for studying the long-term impact on completed fertility)—the Finnish Karelian displacement studied here shares several properties with other more recent displacements. Worldwide, most forced migrants are internally displaced within national borders (UNHCR 2019), as is the case for all forced migrants in our study.

In addition, our study context is an example of internal displacement due to conflict within a country with a majority ethnic group; examples of conflicts that are similar in this regard include the civil wars in El Salvador, Libya, Somalia, and Tajikistan, and recent conflicts between neighboring states such as Russia and Georgia or Armenia and Azerbaijan. There has been some research on the impact of conflict on fertility in such contexts. For example, Torrisi (2020) found modest increases in fertility for internally displaced forced migrants in Azerbaijan. In contrast, Clifford et al. (2010) found evidence of fertility decline in Tajikistan, although this appeared to be because of food crisis rather than the conflict itself. Nevertheless, as we have argued, this and other research have been unable to isolate the disruptive effect of the migration event itself, as we do here.

Research on the Karelian annexation (Saarela and Skirbekk 2019) found a small positive association between fertility and forced migration during childhood for men (but not for women, except after adding certain control variables). Other research on the same context suggests that adults (those aged 14–70 at the time of first forced migration) who married after forced migration had more children if they married someone who was not a forced migrant (Lynch et al. 2019). By contrast, we focus on the role of age at migration, and our study also has the advantage of much greater coverage, which brings several benefits. Because our data cover all male and female residents of Finland at the end of 1970, including those who were forced to migrate, we can study gender differences in the long-term impact of the timing of forced migration. Our data also cover entire childbearing schedules, which allows us to study birth timing (tempo) as well as number of children born (quantum). Conclusions about migrant fertility depend on the way fertility is measured (Parrado 2011; Sobotka and Lutz 2010; Toulemon 2004). It is rare that studies consider both tempo and quantum, let alone the relationship between them (Wilson 2019). In this respect, the data allow us to go beyond previous studies. In addition, they enable us to control for a range of socioeconomic characteristics, and to link parents by place of birth to examine the role of assortative mating.

Background: Explaining Migrant Fertility

Previous research has typically found a negative association between age at migration and fertility prior to arrival for women who migrate as adults (Tønnessen and Wilson 2019; Toulemon 2004; Toulemon and Mazuy 2004; Wilson 2013). Fertility tends to be elevated for women immediately after arrival (Toulemon 2006; Waller et al. 2014), although this pattern of elevation is less evident for men (Wolf 2016). For women,

evidence of elevated fertility exists for both internal (Hoem and Nedoluzhko 2016) and international immigrants (Toulemon 2006). This is often interpreted as evidence of disruption, or at least of "catch-up behavior" in response to the interruption or postponement of childbearing (Hervitz 1985; Milewski 2010).

That said, there is debate over the extent to which the evidence can be interpreted as disruption. In particular, it is hard to interpret any analysis of migrant fertility that only compares childbearing before and after migration (Hoem 2013; Hoem and Nedoluzhko 2016). To examine the impact of disruption, researchers need to compare migrant's actual childbearing with a hypothetical counterfactual representing their fertility in the absence of migration. Because the counterfactual can never be observed at the individual level (Holland 1986), it must be estimated using a proxy. One appropriate counterfactual may be the population of nonmigrants (with similar characteristics) who remain in the origin. When using this to study the fertility of internal migrants, some evidence of disruption has been found, but only for those who moved to large cities (Kulu 2005, 2006). Nevertheless, comparisons with origin remain rare (although for another example see Singley and Landale 1998), most likely because of the paucity of comparable data. An alternative approach is to compare with a group who are likely to exhibit the same fertility as migrants if they had not migrated. Here, we argue that a suitable counterfactual for Finnish forced migrants is those who were also born in Finland but who did not experience any displacement. The appropriateness of any counterfactual is usually determined by the extent that it is affected by selection. In our case, comparison is relatively unaffected by selection. This is because the migration event was largely exogenous with respect to childbearing, because of the similarities between origin and destination, and because the whole population was displaced.

There are several reasons why the disruption of childbearing might be expected to occur as a result of forced migration, and why this process may differ for women and men. Internal migration is associated with economic, social, and psychological costs, all of which may disrupt childbearing (Kulu 2006). In the case of forced migration, internal or international, these costs may be greater (Agadjanian 2018). Moreover, the impact of forced migration on fertility may differ by gender. Women can have less power and autonomy in both private and public life, and resettlement experiences are highly gendered, both generally and for forced migrants (Fiddian-Qasmiyeh 2014; Genereux 2007; Pedraza 1991; Randall 2005; Stepputat and Sørensen 2014). Coupled with greater economic constraints, this implies that women are likely to be more restricted with respect to partnership choice, and social and spatial mobility. Any disruption to childbearing may, therefore, be greater for women than men—particularly at early ages, because women typically begin childbearing sooner than men (Zhang 2011).

It is well known that migration is interrelated with partnership formation (Milewski 2010). Childbearing may be disrupted for unpartnered women and men because of difficulties in finding a partner after migration. In the case of conflict-induced forced migration, gender differences in childbearing may be exacerbated because of shortages of men in the partnership market (especially after a conflict). This may also make assortative mating easier for men, although we note that women's fertility may be stimulated during a conflict if their opportunities outside the home are restricted (Cetorelli 2014). Delays in childbearing may also occur because partners are separated or wait until after migration to start a family. Anticipation and family formation may

therefore be considered a means of explaining disruption, although we note that they are sometimes considered as competing hypotheses (Milewski 2010). In any event, anticipation is likely to play a much smaller role in forced migration (than in other types of migration). We examine partnership in our analysis.

A further requisite for testing disruption is the need to take a longitudinal perspective. Disruption might lead to a temporary reduction in the probability of becoming a parent, which implies a material impact on the tempo of fertility, but no impact on completed fertility. However, disruption could be more permanent, such that it has a material impact on completed fertility. We argue that a comprehensive evaluation of disruption requires not only comparisons between migrants and nonmigrants in some aspect of fertility, but also an investigation of the relationship between quantum and tempo effects by birth cohort and age. This is what we do here, using longitudinal population-register data for the entire Finnish population.

Research Aim and Hypotheses

Our overarching research aim is to examine whether the timing of forced migration is linked with differences in fertility behavior. To answer this question, we focus on the mass-displacement of Finns during the annexation of Finnish Karelia in the 1940s and examine whether there are differences in tempo and quantum of fertility between displaced Karelian Finns and the rest of the Finnish population. Rather than studying only the general role of forced migration, we also examine differences by sex and age at migration. This enables us to test several hypotheses:

Hypothesis 1: The timing of childbearing will be delayed by forced migration (tempo).

Hypothesis 2: Completed fertility will be lower for those who are forced to migrate (quantum).

Hypothesis 3: The impact of forced migration on fertility will be greater for those who migrate after reaching childbearing age than for those who migrated earlier (disruption).

Hypothesis 4: The impact of forced migration on fertility will be greater for those who are born close to the time of the forced displacement (early-childhood trauma).

Hypothesis 5: The impact of forced migration on fertility will be greater for women than for men (sex difference).

Given that we study cohorts of women and men who have completed childbearing, we can test whether the impact of forced migration is temporary (Hypothesis 1) or permanent (Hypothesis 2). With respect to fertility, we operationalize this as a comparison of birth timing (i.e., temporary) and completed fertility (i.e., permanent). The third hypothesis is an explicit formulation of the disruption hypothesis that was developed by scholars of internal migration (Hervitz 1985). The fourth hypothesis links theories that discuss refugees' trauma in relation to their family formation (Agadjanian 2018; Randall 2005; Rumbaut and Weeks 1986) with theories that dis-

cuss the role of trauma close to the time of an individual's birth (Doblhammer et al. 2013; Qi 2017). What separates disruption and early-childhood trauma is that they focus on different ages at migration. Finally, we hypothesize that the impact of forced migration on fertility will be greater for women than men (Hypothesis 5).

Context

A detailed description of the Soviet annexation of Finnish Karelia can be found elsewhere (Haukka et al. 2017; Lynch et al. 2019; Saarela and Elo 2016; Saarela and Skirbekk 2019). In brief, Finland ceded roughly a tenth of its territory to the Soviet Union in a peace treaty signed in March 1940. The entire population of these areas was then evacuated over the following spring and summer. Given that civilians were evacuated from the border regions close to the conflict, there is no evidence that the war experience was stronger for those who (had) lived close to the Russian border (Saarela and Finnäs 2012). In June 1941, the ceded areas were reoccupied by Finland, and from the end of 1941, two thirds of those who had been displaced returned to their prewar homes. However, in the summer of 1944, the entire population of the ceded areas was again forced to relocate. Since then, those areas remained part of the Soviet Union—and later, Russia—and none of the displaced Karelians were given the opportunity to move back.

Consequently, the forced migrants were not selected on observed or unobserved characteristics. With respect to allocation in present-day Finland, they were relocated in a way that was not primarily based on their own subjective choice. However, the government-led settlement policy implied some sorting based on characteristics. All evacuated families had the right to receive a new home, new land, or compensation in proportion to their former circumstances. This resulted in a situation where migrants had fairly similar socioeconomic profiles immediately before and after relocation, and as compared with people living on the Finnish side of the new border.

There are several benefits of studying this context. First, it is unusual because of its size and scale. The entire population of Finnish Karelia was forced to move to other areas of Finland following the Soviet annexation in the 1940s. Second, the differences between origin and destination are minimal. Typically, in studies of forced migration, there are considerable differences between migrants' origin area or country and their new destination in terms of culture, development, and other factors that influence fertility. The absence of material differences in this Finnish context means that we can investigate the disruptive impact of forced migration, net of many other factors that impact migrant fertility, in particular adaptation, anticipation, and selection. Adaptation is premised on the existence of a difference between origin and destination, anticipation cannot have played a major role, and selection into migration must have been modest because of the exogeneity of forced migration and because the entire origin population was forced to move.

Disruption is predicted to occur if migration occurs after people reach childbearing ages. The most commonly stated mechanism for disruption—net of anticipation and selection—is the disruption of partnership, which is also a plausible mechanism to explain how early-childhood trauma impacts fertility. One possibility is that those who experience trauma are then less willing or able to find a partner: for example,

because of long-term health consequences, which in turn impact their opportunities to find a partner. Given that partnership is one of the most likely mechanisms for both the disruption and early-childhood trauma hypotheses, our context is advantageous because we can link both parents of each child and examine how fertility varies according to the place of birth of both parents. We can not only identify whether parents were born in the ceded areas of Karelia, but also if they were born in the same municipality. These variables will mean different things depending on age at migration, but they nevertheless provide additional insights about the mechanisms involved. We can also test the role of social and spatial mobility. Lynch et al. (2019) have proposed that settlement after migration involves a trade-off between reproduction and social status. We examine this explanation, alongside the role of spatial mobility, in the final part of our analysis.

Data and Methods

Our data come from the Finnish population registers, which cover the entire resident population of Finland from the end of 1970 onward. These registers allow us to identify persons who were born in the ceded areas and those who were not. The former are all assumed to be forced migrants, which can be justified by the very low levels of internal migration from ceded areas that occurred prior to 1940. Our data also allow us to link all members of our study population to their children, if they and their children were alive and residing in the same household in present-day Finland at the end of 1970, or if their children were born after 1970. These linkages then allow us to calculate parents' childbearing history. In essence, our observation window starts in 1970, such that people who died or emigrated from birth until 1970 are not included in the data. This is a source of potential bias that we investigate using supplementary analysis. A 10% sample of the 1950 census makes it possible to evaluate whether there is selective drop out due to emigration or death in the 1950s and 1960s for the displaced persons, as compared with nondisplaced persons. As shown in Figure A1 in the online appendix, we find no such evidence.

The Finnish register data provide high-quality estimates of childbearing over the entire life course for individuals aged 20 or younger at the time of the first forced migration, as well as information on municipality of birth, birth cohort, age at migration, sex, and several control variables (homeownership, education, socioeconomic status, and income). We also have information on the municipality of birth for the other parent of their children. Because quinquennial censuses were used for values of the control variables prior to 1987, they are measured at ages 46–50. We provide a detailed discussion of data quality in a supplementary note in the online appendix, which also highlights the benefits of our data relative to samples used in prior studies of this setting. The appendix also shows that fertility is underestimated for earlier-born cohorts, and particularly for those born before 1920 (Figures A2–A5). Therefore, our study population includes only those aged 20 or younger at the time of first forced migration in 1940 (i.e., born in 1920 or later). Even for some of these women, such as those born in the mid-1920s, we note that their completed cohort fertility may be slightly underestimated relative to other sources (Human Fertility Database 2021). This is not irrelevant from the perspective of age at migration, as underestimation

of fertility is likely to be larger for older birth cohorts (i.e., those who were older at migration). However, this will only be a source of bias in fertility differentials if the magnitude of underestimation differs materially between the two groups being compared, which we do not believe is the case.

In addition to using these full population data, we also make use of the 10% sample from the 1950 census, which we combine with the full population data to examine individual social and spatial mobility. More specifically, we examine the role of changes between 1950 and 1970 in different variables, including whether people live in the same municipality, or in a city, or in Helsinki, and changes in their socioeconomic status based on occupation, education, and homeownership. Although this sample provides greater flexibility than using the full-population data, it provides less statistical power. An overview of data quality regarding the 1950 sample is given in the online appendix. Here, it is sufficient to say that we find no evidence of bias in its estimates of fertility and no evidence that we believe would invalidate our conclusions.

We begin by estimating the average number of children ever born at each childbearing age from 15–45 alongside several other fertility measures. This is done separately for women and men from different birth cohorts, according to whether they were born in the ceded areas of Finland. These numbers allow us to examine age profiles of children ever born, age profiles of first parenthood, differences in completed fertility (measured at age 45) by age at first forced migration, and differences in children ever born by age and age at first forced migration, comparing with persons born in present-day Finland. We carry out further analysis to control for various potential confounding factors. Differences in completed fertility are estimated using a series of Poisson regression models with controls for homeownership, education, income, and socioeconomic status.

Finally, we examine the roles of social mobility, spatial mobility, and assortative mating (often called intermarriage), not least because these factors have been found to be associated with fertility in the same context that we study (Lynch et al. 2019). We use the 10% sample from the 1950 census to estimate differences in completed fertility while controlling for social and spatial mobility between 1950 and 1970, and to determine whether other parents were born in the ceded area or the same municipality, which can be interpreted as measures of assortative mating.

Results

The Impact of Forced Migration on Fertility

Table 1 provides summary statistics of fertility for women and men born in the ceded areas (forced migrants) and those born in present-day Finland. We also provide summary statistics in Table A1 (online appendix), based on the total population for cohorts born between 1927 and 1944 (rather than from 1920). This table provides estimates for the whole population that are directly comparable with those produced using a sample of the population in previous research (Saarela and Skirbekk 2019). We note that our estimates of fertility are similar to those produced in this earlier research.

The results show that forced migrants were more likely than those born in present-day Finland to have children with someone born in the ceded areas (14% vs. 7% for

Table 1 Descriptive statistics of fertility of women and men born in 1920–1944 in the ceded areas and in present-day Finland

	Born in Ceded Areas			Born in Present-Day Finland		
	All	Other Parent Born in Ceded Areas	Other Parent Born in Same Municipality in Ceded Areas	All	Other Parent Born in Ceded Areas	Other Parent Born in Same Municipality in Present-Day Finland
Women						
Total number of individuals	68,542	9,428	3,007	672,798	45,569	128,070
% with children	79.4			81.8		
Mean number of children	1.97			2.11		
% with other parent born in ceded areas	13.8			6.8		
% with other parent born in same municipality	4.4			19.0		
Mean number of children, parents only	2.48	2.57	2.69	2.58	2.56	2.86
Mean age at birth of first child, parents only	25.4	25.4	25.2	25.0	24.9	24.4
Men						
Total number of individuals	66,270	7,565	2,216	669,271	36,212	127,938
% with children	78.1			77.4		
Mean number of children	1.93			1.94		
% with other parent born in ceded areas	11.4			5.4		
% with other parent born in same municipality	3.3			19.1		
Mean number of children, parents only	2.47	2.53	2.63	2.51	2.50	2.72
Mean age at birth of first child, parents only	27.2	27.2	27.2	27.1	26.8	26.8

Notes: If the individual has children with more than one partner, "Other parent born in ceded areas" refers to any other parent. The other parent cannot be identified for 3,830 of the women born in the ceded areas, for 31,924 of the women born in present-day Finland, for 370 of the men born in the ceded areas, and for 2,893 of the men born in present-day Finland. Fertility is measured at age 45.

women and 11% vs. 5% for men); however, those born in present-day Finland were more likely than forced migrants to have children with someone born in the same municipality (19% vs. 4% for women and 19% vs. 3% for men). Male forced migrants were slightly less likely than those born in present-day Finland to be childless (22% vs. 23%) and had similar completed fertility at age 45 (1.93 vs. 1.94). For women, differences in fertility were much more apparent, with forced migrants having lower fertility rates than those born in present-day Finland: forced migrant women were more likely to be childless (21% vs. 18%) and to have a lower completed fertility (1.97 vs. 2.11).

In Figures 1 and 2, we show differences between forced migrants and other Finns in terms of quantum and tempo effects, with a focus on age at migration. Figure 1 does this for completed fertility, thereby testing the quantum hypothesis (Hypothesis 2), while Figure 2 does this at all childbearing ages, thereby testing the tempo hypothesis (Hypothesis 1). Both figures show at which migration age(s) any fertility differences appear, therefore enabling a test of the disruption hypothesis (Hypothesis 3) and the early-childhood trauma hypothesis (Hypothesis 4). Moreover, both figures compare women and men, thereby facilitating a test of the sex difference hypothesis (Hypothesis 5).

There is evidence of a strong negative impact of forced migration on fertility, at least for women; however, although this may appear to represent a "disruption" of fertility, it is not limited to childbearing ages. Instead, we find evidence of an impact on fertility among women who were forced to move at all ages from one to 20. This is evident for both quantum (Figure 1) and tempo (Figure 2), which suggests a pervasive impact across the childbearing life course. For these women, forced migration appears to begin to have an impact very early in their childbearing careers and has an ongoing impact for almost all ages at migration. In other words, we find clear evidence in support of the quantum and tempo hypotheses, but a lack of evidence that would unambiguously support the disruption or early-childhood trauma hypotheses. The ambiguity rests on the fact that—despite a clear impact of forced migration—there are no clear differences between female forced migrants who migrated at different ages.

The outlier is women who were born in 1940 (i.e., the same year as the first evacuation), who exhibit elevated levels of fertility. This may be interpreted as evidence against the early-childhood trauma hypothesis for this cohort. One may compare them with women with a negative age at migration—that is, those not yet born during the first evacuation, but who were younger than five during the second evacuation. Women born in the same year as the second evacuation (1944) do not have the same elevated (relative) completed fertility as those born in the same year as the first evacuation (1940). This difference may relate to the fact that the first evacuation was less anticipated and more materially significant for people's lives. Nevertheless, women born after the first evacuation seem to have similar fertility profiles to those forced to migrate as children, which suggests that much of the observed impact of forced migration may be determined via family-level factors, including those relating to parents and the long-term impact of resettlement.

In general, the evidence for an impact of forced migration on fertility for men is much weaker than that for women, providing support for the sex difference hypothesis. Figure 1 shows that completed fertility differentials are much smaller for men. In the case of men who were displaced just before the early teenage years (before the onset of puberty), there is no evidence of an impact on completed fertility whatsoever.

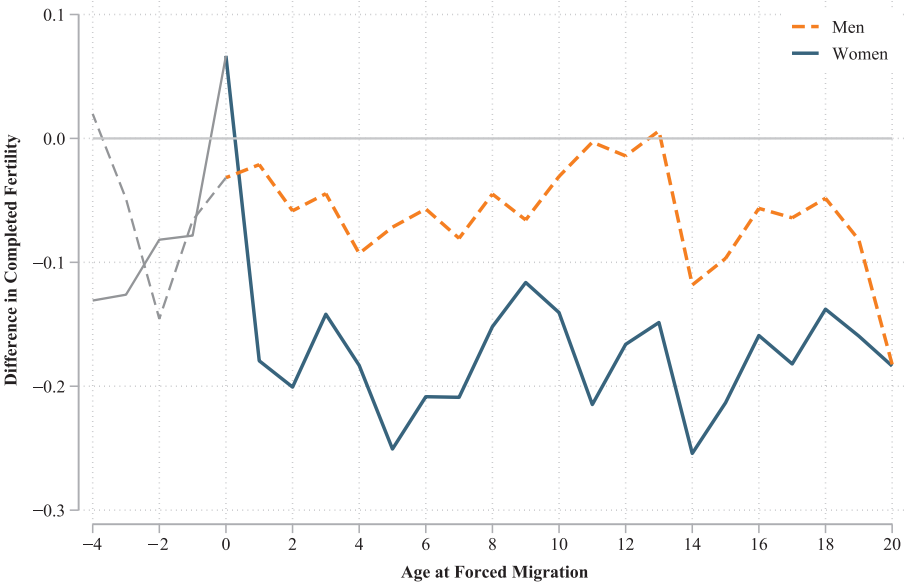

Fig. 1 Difference in completed fertility between forced migrants (those born in ceded areas) and people born in present-day Finland, by age at forced migration. Negative numbers indicate a lower level of completed fertility for forced migrants who were born in ceded areas. Estimates are for the whole population.

Figure 2 shows that the tempo effects of forced migration are also very different for men than for women. Until age 30, male forced migrants tend not to exhibit any negative differential as compared with men born in present-day Finland. Prior to this age, some groups even appear to experience an elevation in their childbearing intensity, notably those who were displaced just before or around the onset of puberty. In essence, we find ambiguous evidence in support of any of the tempo, quantum, disruption, and early-childhood trauma hypotheses for men. The notable outliers are men who migrated after reaching childbearing age (i.e., 20) and those born in ceded areas in 1942. Both of these groups exhibit a lower completed fertility than all other male forced migrants, and on a par with the largest negative differentials observed for women. In the case of those men who migrated at age 20, this may be related to the fact that they constitute the youngest cohort who were mobilized for armed service during the Winter War of 1939–1940 (Saarela and Finnäs 2012).

With respect to the link between age at arrival and fertility, we have argued that our findings are easier to interpret than those relating to other contexts, essentially because they are much less likely to be affected by selective migration and adaptation after arrival. To elucidate this point, we conduct additional analysis of Finnish emigrants to Sweden from similar birth cohorts and ages at arrival that we study using the Finnish data (see online appendix for detailed results). In essence, this analysis shows that, in stark contrast to the depressed levels of fertility among Finnish forced migrants, Finns who emigrated to Sweden immediately after the Second World War had elevated levels of fertility, in comparison to both people born in present-day Finland (Figure A6, online appendix) and those born in Sweden (Figure A7). The comparison with Sweden also suggests that Finns who emigrated to Sweden had

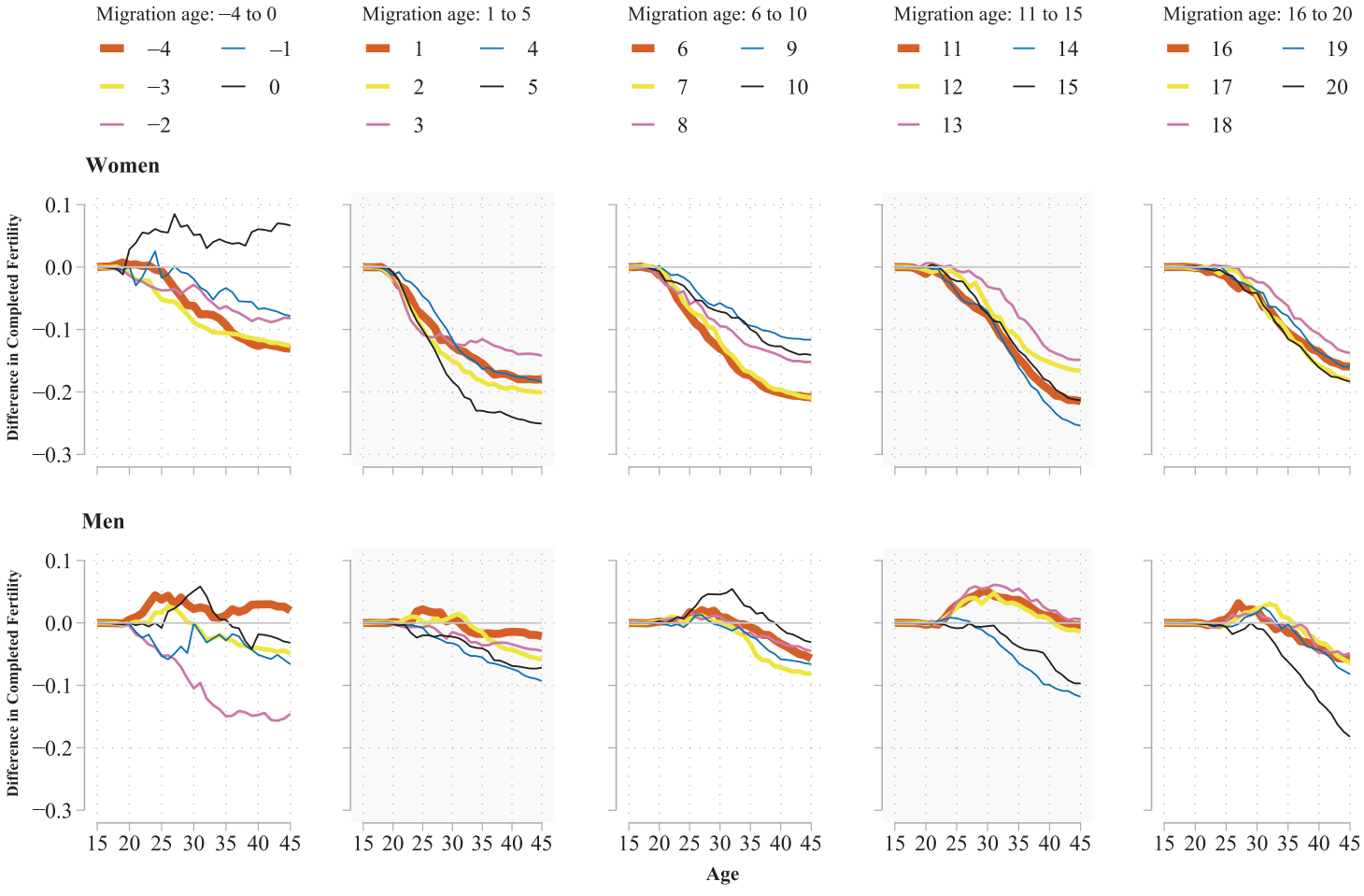

Fig. 2 Difference in children ever born between forced migrants (those born in ceded areas) and people born in present-day Finland, by age and age at migration. Negative numbers for the difference in children ever born indicate a lower level of children ever born for forced migrants who were born in ceded areas. Negative ages at migration represent those born after the first forced migration in 1940. Estimates are for the whole population.

fertility more similar to that of Swedes if they arrived as infants, rather than as teenagers. This is in line with predictions of adaptation; however, we note that Sweden had a total fertility rate that was lower than Finland's in the postwar period (0.74 children per woman lower, on average, from 1945 to 1959; Human Fertility Database 2021). The results of this additional analysis suggest that differences in the processes of selection and adaptation, or an absence of these processes, will result in fertility differences between migrants who are forced to move and those who are not.

The Role of Social Mobility, Spatial Mobility, and Assortative Mating

Given evidence of an impact of forced migration, particularly for women, we next examine whether this is explained by spatial and social mobility. The role of these factors is particularly relevant because prior research concluded that settlement after migration for forced migrants from Finnish Karelia involved a trade-off between reproduction and social status (Lynch et al. 2019).

Figure 3 shows the results of a series of Poisson regression models, including one that reestimates the results in Figure 1 but with controls for homeownership, education, socioeconomic status, and income (model 3). Given that these are potential mediators, the results for age at migration from these models may be interpreted as controlled direct effects, rather than total effects. Nevertheless, our main conclusion is that these factors do not explain the patterns of completed fertility by age at forced migration discussed earlier (and shown in Figure 1). The use of a generalized linear model also allows the estimation of relative risks (shown in Figure 3), as opposed to absolute differences in the number of children born (shown in Figures 1 and 2), and the standard errors of the parameters estimated. We provide 95% confidence intervals, but we want to stress that, because the data cover the entire population, these should be seen as providing an overview of the spread of the relative risks, rather than serving as a means for statistical hypothesis testing.

To supplement the analysis shown in Figure 3, we also analyze the role of social and spatial mobility using the 10% sample of the 1950 census (see Tables A3 and A4 in the online appendix). There was no difference between male forced migrants and men born in present-day Finland after pooling all ages at migration, so here we focus on women. Our analysis suggests that spatial or social mobility (e.g., moving to Helsinki or from a blue-collar to a white-collar occupation) cannot fully explain the relative fertility differential of women. The ratio of completed fertility for female forced migrants relative to that of women not forced to move is only partially reduced (from 0.90 to 0.94) after the addition of a full set of controls for social and spatial mobility. This suggests that our findings are not explained by the initial location of allocation, internal migration after displacement, initial socioeconomic status, or changes in socioeconomic status, which is in contrast to the argument of Lynch et al. (2019). However, we note that the estimated ratio for women does attenuate further (to 0.96–0.98) after the addition of municipality-level fixed or random effects (in 1950 or 1970, both were analyzed). These analyses (not shown here) control for all unobserved factors that are associated with the municipality (e.g., unemployment in local labor markets or different levels of support from local communities). The results suggest that the fertility of forced migrants is determined, to some extent, by factors relating to where they live,

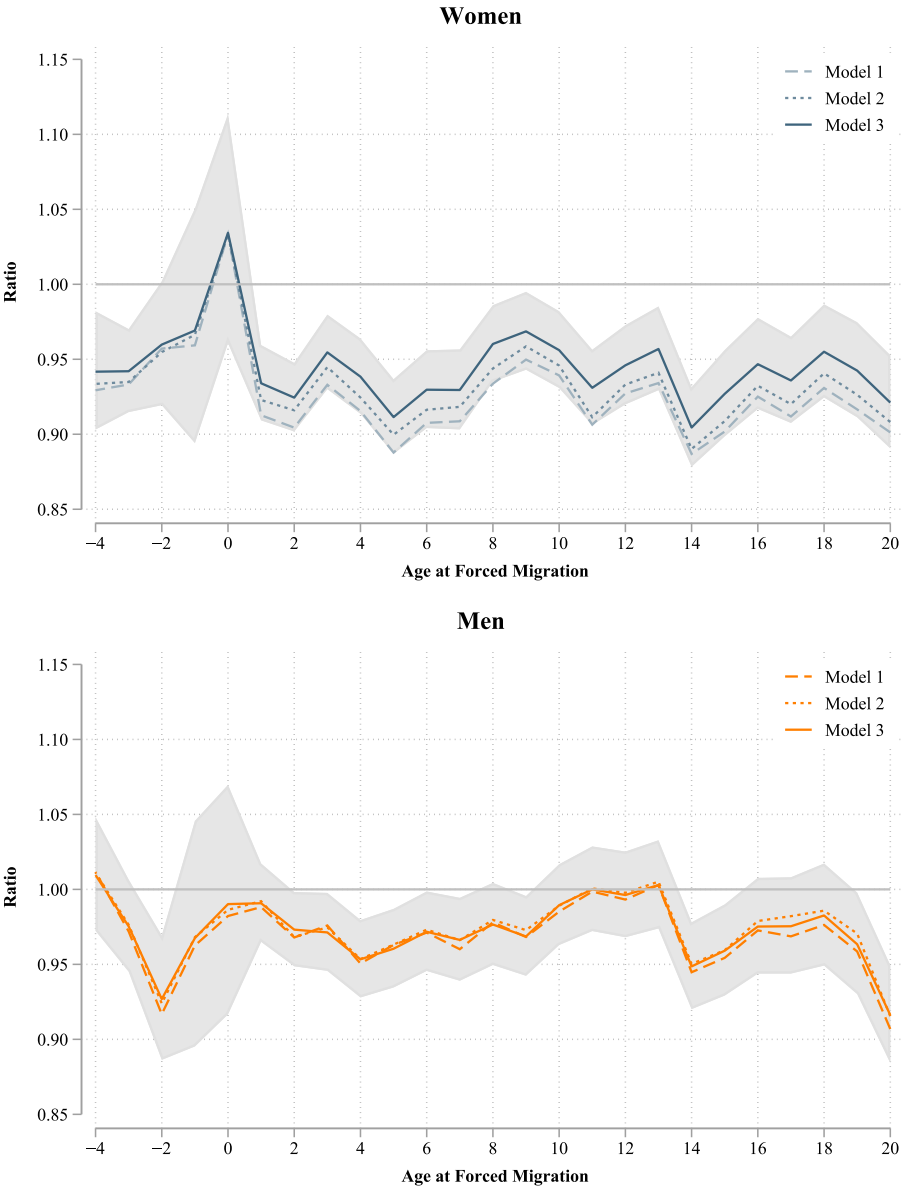

Fig. 3 Ratio of completed fertility comparing forced migrants (those born in ceded areas) and people born in present-day Finland, by age at forced migration. Model 1 has no controls; model 2 controls for home ownership and education; and model 3 is the same as model 2 with additional controls for socioeconomic status and income. All controls were measured at age 46–50. The outcome in all models is completed fertility at age 45. The gray shading indicates the range of 95% confidence intervals estimated for model 3. Estimates are for the whole population.

and their subsequent mobility, after displacement. Nevertheless, this is clearly not the only explanation for the impact of migration on their fertility.

We also examine another factor that may explain our findings: assortative mating. We investigate this by examining the interaction between area of birth for both parents. It appears to explain some of the disruption, because the negative impact of forced migration on fertility appears to be lower for forced migrants who did not have children with other forced migrants, conditional on spatial and socioeconomic controls (for detailed results, see Table A4 in the online appendix). However, the results also show differences between forced migrants who partner with other forced migrants depending on whether they were born in the same ceded municipality or a different one. At most, this suggests only a limited influence of assortative mating on disruption.

Discussion

Forced migration may have both temporary and permanent consequences. Because of a lack of suitable data and the difficulties of controlling for anticipation, long-term consequences are hard to evaluate in many settings—especially for outcomes like completed fertility, which can only be measured once people approach the end of their reproductive careers. We have addressed this gap by studying a unique example of displacement in which the entire population of Finnish Karelia was forced to move elsewhere in Finland.

In summary, we find consistent evidence in support of a permanent and pervasive impact of forced migration on women's fertility. Compared with similar women born in present-day Finland, female forced migrants had delayed childbearing and lower levels of completed fertility for all ages at migration, from one to 20. Although we find clear support for the quantum and tempo hypotheses, the absence of a clear gradient for women by age at migration represents a lack of evidence that would unambiguously support the disruption hypothesis.

Although our results suggest that future research may expect forced migration at any childhood age to result in lower fertility for women, we cannot attribute this directly to disruption. The pattern we observe may be explained by different mechanisms at different ages at migration and there may be some disruption for those who migrate after the onset of puberty (i.e., at childbearing ages). However, given the homogeneity by age at migration for women, it seems more likely that there is a general explanation linked to the long-term impact of forced migration during childhood. Women who were forced to migrate at ages one to 20 have an estimated 0.1–0.3 fewer children at age 45 than similar women born in present-day Finland. This difference may appear small, but we note that it is material in the context of prior studies of migrant fertility—for example, when comparing the completed fertility of foreign-born and native-born women living in the United Kingdom (Wilson 2019).

One clear outlier from this general pattern for women is those born in the year of the first evacuation (in 1940), who had elevated fertility. At face value, this may be evidence against the early-childhood trauma hypothesis, which posits that the impact of forced migration will be greater for those born close to the time of the forced displacement. For this specific cohort of women, the negative effect of forced migration on fertility—as seen for the other cohorts—may be counterbalanced by a

fertility-increasing effect due to being *in utero* during a humanitarian crisis. Yet we are unable to test this more specifically and there is little evidence for such a conclusion from other studies comparing proximate birth cohorts of women (Lumey 1998), so more research is required to assess the validity of this conclusion.

Prior research on the fertility of forced migrants has rarely focused on men. We show that the impact of forced migration is highly gendered and that the evidence of an impact of forced migration on male fertility is ambiguous. In particular, contrary to our expectations, the fertility of male forced migrants was often elevated prior to age 40, relative to Finns not forced to move, suggesting an earlier transition to parenthood. Completed fertility differentials are smaller for men than for women, and there is no evidence of an impact on completed fertility for men displaced just before their early teenage years. These findings suggest that age at forced migration is a more important determinant of fertility for men than women, even though forced migration has a notably stronger effect on fertility for women.

With respect to early-childhood trauma, the results for men and women are ambiguous, with few differences between the fertility profiles of those migrating between ages one and nine. The outlier for women is those aged zero in 1940, and there is some similarity between women and men from this cohort in their early life course childbearing, although not after age 30. Perhaps the greatest similarity between men and women is for those who migrated at age 20, who have a similar differential in terms of completed fertility; however, for men who migrated at this age, this may be because of their direct involvement in the armed conflict as soldiers.

Prior research on the same setting has concluded that settlement after forced migration involves a trade-off between reproduction and social status (Lynch et al. 2019). Our findings cast doubt on this conclusion, essentially because we find that evidence for women persists after controlling for social mobility. That said, we find some attenuation of the differences between female forced migrants and women born elsewhere in Finland, especially after controlling for spatial mobility and changes in socioeconomic status. Earlier research has shown that many forced migrants moved within Finland after they had been relocated. In 1950, 10 years after the first displacement, roughly half of the displaced population lived in their designated placement areas (Waris et al. 1952). Several decades after displacement, men who had moved internally within Finland earned more than those who stayed in their designated area (Sarvimäki et al. 2009). Although social mobility does not fully explain our results, internal migration after displacement may have been easier for men than women and that, in turn, may explain some of the observed gender differences.

We also show that assortative mating—based on the birthplace of the other parent—provides only a partial explanation at best for the depressed fertility of female forced migrants. In some cases, having a partner who was also a forced migrant may mean that the whole family moved together (unfortunately, we do not have information on this). However, given the young ages at migration in our study population, it is more likely to represent assortative mating after migration. Indeed, it may be tempting to conclude that our results suggest a magnification of the impact of forced migration on fertility when both parents are forced migrants, for example, because of both experiencing trauma. However, we note that this interrelation is found to be weak, appears to be the case for women and not for men, and applies only after controlling for social and spatial mobility. Therefore, the effect of assortative mating is somewhat ambiguous,

although it may reflect the role of local and social networks after migration in determining partnership behavior. Forced migrants were allocated across Finland, but people from the same neighborhood were often allocated to the same area. Indeed, the settlement patterns of forced migrants after displacement, and their subsequent migration, may be an important aspect of whether our findings generalize to other contexts.

We have already noted some of the other potential limitations of this study, and they are further discussed in the online appendix. Fertility was estimated using linkages between parents and children for those who were in the register at the end of 1970. If anything, this means that estimates of children ever born are biased downward because of the mortality and emigration of either parents or children, and if children had moved out of the parental home before the end of 1970. However, for the younger birth cohorts we studied, these issues are not likely to impact the results to any noteworthy degree. Furthermore, we do not know if people born in ceded Karelia left the area prior to 1940. From the 1950 census, we observed some internal migration prior to 1940, albeit at a low rate that cannot affect the results (see Table A2 in the online appendix). Another limitation is that we do not know whether persons born in the ceded areas before 1940 were forced to move once or twice. The first evacuation was in 1940 and the second in 1944, and relatively few children were born in ceded Karelia between 1940 and 1944 (Saarela and Elo 2016). Therefore, the result for this group (with negative ages in Figures 2 and 3) should be treated with some caution and may be harder to generalize.

With all this in mind, we recommend that future research attempt to evaluate the generalizability of our results, as there is scant knowledge about the completed fertility of forced migrants in other contexts. The validity of our findings is partly based on the similarity between origin and destination, which means that we can show the disruptive impact of forced migration, net of other factors that impact migrant fertility, including adaptation, anticipation, and selection. This is useful to isolate disruption, but it also prevents an understanding of whether disruption is different for women and men whose migration is (more) planned, such as those who migrate for work or to reunite with their family. This study may isolate the impact of migration itself but fails to capture any disruption that could be caused by the anticipation of migration. At the same time, the disruptive impact of forced migration on fertility could vary depending on the precise combination of origin, destination, and reason for being forced to move, such as the reception of forced migrants in their new destination. In our study, forced migrants were supported by the government and expected to integrate into society, as there were no possibilities for return migration after 1944 (Loehr et al. 2017; Saarela and Finnäs 2009). This is unlikely to always be the case. Nevertheless, this study adds to existing evidence that suggests the impacts of forced migration may reach many years into the future (Saarela and Finnäs 2009). We have focused on forced displacement within existing national boundaries due to conflict, a situation that remains all too prevalent for many contemporary populations who are internally displaced (UNHCR 2016). The long-term consequences of recent displacements remain to be seen. ■

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References

Adserà, A., & Ferrer, A. (2014). Factors influencing the fertility choices of child immigrants in Canada. *Population Studies, 68,* 65–79.

Adserà, A., Ferrer, A. M., Sigle-Rushton, W., & Wilson, B. (2012). Fertility patterns of child migrants: Age at migration and ancestry in comparative perspective. *Annals of the American Academy of Political and Social Science, 643,* 160–189.

Agadjanian, V. (2018). Interrelationships of forced migration, fertility and reproductive health. In G. Hugo, M. Abbasi-Shavazi, & E. Kraly (Eds.), *International studies in population: Vol. 13. Demography of refugee and forced migration* (pp. 113–124). Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-319-67147-5_6

Ager, A., & Strang, A. (2008). Understanding integration: A conceptual framework. *Journal of Refugee Studies, 21,* 166–191.

Anders, J., Burgess, S., & Portes, J. (2018). *The long-term outcomes of refugees: Tracking the progress of the East African Asians* (IZA Discussion Paper No. 11609). Bonn, Germany: Institute of Labor Economics.

Andersson, G. (2004). Childbearing after migration: Fertility patterns of foreign-born women in Sweden. *International Migration Review, 38,* 747–774.

Avogo, W., & Agadjanian, V. (2008). Childbearing in a crisis: War, migration and fertility in Angola. *Journal of Biosocial Science, 40,* 725–742.

Balbo, N., Billari, F. C., & Mills, M. (2012). Fertility in advanced societies: A review of research. *European Journal of Population / Revue Européenne de Démographie, 29,* 1–38.

Bansak, K., Ferwerda, J., Hainmueller, J., Dillon, A., Hangartner, D., Lawrence, D., & Weinstein, J. (2018). Improving refugee integration through data-driven algorithmic assignment. *Science, 359,* 325–329.

Bauer, T. K., Giesecke, M., & Janisch, L. M. (2019). The impact of forced migration on mortality: Evidence from German pension insurance records. *Demography, 56,* 25–47.

Bevelander, P. (1999). The employment integration of immigrants in Sweden. *Journal of Ethnic and Migration Studies, 25,* 445–468.

Bevelander, P., & Pendakur, R. (2014). The labour market integration of refugee and family reunion immigrants: A comparison of outcomes in Canada and Sweden. *Journal of Ethnic and Migration Studies, 40,* 689–709.

Black, R. (1994). Livelihoods under stress: A case study of refugee vulnerability in Greece. *Journal of Refugee Studies, 7,* 360–377.

Busetta, A., Mendola, D., Wilson, B., & Cetorelli, V. (2019). Measuring vulnerability of asylum seekers and refugees in Italy. *Journal of Ethnic and Migration Studies, 47,* 596–615.

Castles, S., de Haas, H., & Miller, M. J. (2013). *The age of migration: International population movements in the modern world* (5th ed.). New York, NY: The Guilford Press.

Cetorelli, V. (2014). The effect on fertility of the 2003–2011 war in Iraq. *Population and Development Review, 40,* 581–604.

Cetorelli, V., Burnham, G., & Shabila, N. (2017). Health needs and care seeking behaviours of Yazidis and other minority groups displaced by ISIS into the Kurdistan region of Iraq. *PLoS One, 12,* e0181028. https://doi.org/10.1371/journal.pone.0181028

Clifford, D., Falkingham, J., & Hinde, A. (2010). Through civil war, food crisis and drought: Trends in fertility and nuptiality in post-Soviet Tajikistan. *European Journal of Population / Revue Européenne de Démographie, 26,* 325–350.

Cohen, J. E., Kravdal, Ø., & Keilman, N. (2011). Childbearing impeded education more than education impeded childbearing among Norwegian women. *Proceedings of the National Academy of Sciences, 108,* 11830–11835.

Crepet, A., Rita, F., Reid, A., Van den Boogaard, W., Deiana, P., Quaranta, G., . . . Di Carlo, S. (2017). Mental health and trauma in asylum seekers landing in Sicily in 2015: A descriptive study of neglected invisible wounds. *Conflict and Health, 11,* 1. https://doi.org/10.1186/s13031-017-0103-3

Doblhammer, G., van den Berg, G. J., & Lumey, L. H. (2013). A re-analysis of the long-term effects on life expectancy of the Great Finnish Famine of 1866–68. *Population Studies, 67,* 309–322.

Dribe, M., & Stanfors, M. (2009). Does parenthood strengthen a traditional household division of labor? Evidence from Sweden. *Journal of Marriage and Family, 71,* 33–45.

Farber, S. C., & Lee, B. S. (1984). Fertility adaptation of rural-to-urban migrant women: A method of estimation applied to Korean women. *Demography, 21,* 339–345.

Fiddian-Qasmiyeh, E. (2014). Gender and forced migration. In E. Fiddian-Qasmiyeh, G. Loescher, K. Long, & N. Sigona (Eds.), *The Oxford handbook of refugee and forced migration studies* (pp. 395–408). Oxford, UK: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199652433.013.0010

Fiddian-Qasmiyeh, E., Loescher, G., Long, K., & Sigona, N. (Eds.). (2014). *The Oxford handbook of refugee and forced migration studies*. Oxford, UK: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199652433.013.0010

Ford, K. (1990). Duration of residence in the United States and the fertility of U.S. immigrants. *International Migration Review, 24,* 34–68.

Genereux, A. (2007). *A review of migration and fertility theory through the lens of African immigrant fertility in France* (MPIDR Working Paper, No. WP 2007-008). Rostock, Germany: Max Planck Institute for Demographic Research. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.113.2216&rep=rep1&type=pdf

Goisis, A., & Sigle-Rushton, W. (2014). Childbearing postponement and child well-being: A complex and varied relationship? *Demography, 51,* 1821–1841.

Goldstein, S., & Goldstein, A. (1982). *Techniques for analysis of the interrelations between migration and fertility* (Report). Santa Monica, CA: Rand Corporation. Retrieved from https://pdf.usaid.gov/pdf_docs/pnaap927.pdf

Hainmueller, J., Hangartner, D., & Lawrence, D. (2016). When lives are put on hold: Lengthy asylum processes decrease employment among refugees. *Science Advances, 2,* e1600432. https://doi.org/10.1126/sciadv.1600432

Harbison, S. F., & Weishaar, M. (1981). Samoan migrant fertility: Adaptation and selection. *Human Organization, 40,* 268–273.

Haukka, J., Suvisaari, J., Sarvimäki, M., & Martikainen, P. (2017). The impact of forced migration on mortality: A cohort study of 242,075 Finns from 1939–2010. *Epidemiology, 28,* 587–593.

Hermans, M. P. J., Kooistra, J., Cannegieter, S. C., Rosendaal, F. R., Mook-Kanamori, D. O., & Nemeth, B. (2017). Healthcare and disease burden among refugees in long-stay refugee camps at Lesbos, Greece. *European Journal of Epidemiology, 32,* 851–854.

Hervitz, H. M. (1985). Selectivity, adaptation, or disruption? A comparison of alternative hypotheses on the effects of migration on fertility: The case of Brazil. *International Migration Review, 19,* 293–317.

Hill, K. (2004). *War, humanitarian crises, population displacement, and fertility: A review of evidence*. Washington, DC: National Academies Press.

Hobcraft, J., & Kiernan, K. (2001). Childhood poverty, early motherhood and adult social exclusion. *British Journal of Sociology, 52,* 495–517.

Hoem, J. M. (2013). The dangers of conditioning on the time of occurrence of one demographic process in the analysis of another. *Population Studies, 68,* 151–159.

Hoem, J. M., & Nedoluzhko, L. (2016). The dangers of using 'negative durations' to estimate pre- and post-migration fertility. *Population Studies, 70,* 359–363.

Holland, P. W. (1986). Statistics and causal inference. *Journal of the American Statistical Association, 81,* 945–960.

Human Fertility Database. (2021). Rostock, Germany: Max Planck Institute for Demographic Research; Vienna, Austria: Vienna Institute of Demography. Accessed April 27, 2021. Available from https://www.humanfertility.org/

Kahn, J. R. (1988). Immigrant selectivity and fertility adaptation in the United States. *Social Forces, 67,* 108–128.

Kahn, J. R., García-Manglano, J., & Bianchi, S. M. (2014). The motherhood penalty at midlife: Long-term effects of children on women's careers. *Journal of Marriage and Family, 76,* 56–72.

Kulu, H. (2005). Migration and fertility: Competing hypotheses re-examined. *European Journal of Population / Revue Européenne de Démographie, 21,* 51–87.

Kulu, H. (2006). Fertility of internal migrants: Comparison between Austria and Poland. *Population, Space and Place, 12,* 147–170.

Livi Bacci, M. (2012). *A short history of migration* (C. Ipsen, Trans.). Cambridge, UK: Polity Press. (Original work published 2010)

Loehr, J., Lynch, R., Mappes, J., Salmi, T., Pettay, J., & Lummaa, V. (2017). Newly digitized database reveals the lives and families of forced migrants from Finnish Karelia. *Finnish Yearbook of Population Research, 52,* 59–70.

Lumey, L. H. (1998). Reproductive outcomes in women prenatally exposed to undernutrition: A review of findings from the Dutch famine birth cohort. *Proceedings of the Nutrition Society, 57,* 129–135.

Lynch, R., Lummaa, V., Panchanathan, K., Middleton, K., Rotkirch, A., Danielsbacka, M., . . . Loehr, J. (2019). Integration involves a trade-off between fertility and status for World War II evacuees. *Nature Human Behaviour, 3,* 337–345. https://doi.org/10.1038/s41562-019-0542-5

Marbach, M., Hainmueller, J., & Hangartner, D. (2018). The long-term impact of employment bans on the economic integration of refugees. *Science Advances, 4,* eaap9519. https://doi.org/10.1126/sciadv.aap9519

Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. E. (2005). *Worlds in motion: Understanding international migration at the end of the millennium*. Oxford, UK: Oxford University Press.

Mendola, D., & Busetta, A. (2018). Health and living conditions of refugees and asylum-seekers: A survey of informal settlements in Italy. *Refugee Survey Quarterly, 37,* 477–505.

Menken, J. (1979). Seasonal migration and seasonal variation in fecundability: Effects on birth rates and birth intervals. *Demography, 16,* 103–119.

Milewski, N. (2007). First child of immigrant workers and their descendants in West Germany: Interrelation of events, disruption, or adaptation? *Demographic Research, 17,* 859–896. https://doi.org/10.4054/DemRes.2007.17.29

Milewski, N. (2010). *Fertility of immigrants: A two-generational approach in Germany*. Berlin, Germany: Springer-Verlag. Retrieved from https://link.springer.com/book/10.1007/978-3-642-03705-4

Mussino, E., & Strozza, S. (2012). The fertility of immigrants after arrival: The Italian case. *Demographic Research, 26,* 99–130. https://doi.org/10.4054/DemRes.2012.26.4

Mussino, E., Wilson, B., & Andersson, G. (2021). The fertility of child migrants from low fertility origins: Does social support for childbearing have an impact on tempo and quantum differentials? *Demography, 58,* 2169–2191.

Nisén, J., Bijlsma, M. J., Martikainen, P., Wilson, B., & Myrskylä, M. (2018, April). *Postponement of parenthood and socioeconomic standing in young adulthood: A longitudinal analysis on women and men*. Paper presented at the annual meeting of the Population Association of America, Chicago, IL.

Parrado, E. A. (2011). How high is Hispanic/Mexican fertility in the United States? Immigration and tempo considerations. *Demography, 48,* 1059–1080.

Pedraza, S. (1991). Women and migration: The social consequences of gender. *Annual Review of Sociology, 17,* 303–325.

Qi, H. (2017). *Origins of sickness: Evidence from China famine survivors in Sweden* (SRRD No. 2017:21). Stockholm, Sweden: Stockholm University, Demography Unit. https://doi.org/10.17045/sthlmuni.5481379.v1

Randall, S. (2005). The demographic consequences of conflict, exile and repatriation: A case study of Malian Tuareg. *European Journal of Population / Revue Européenne de Démographie, 21,* 291–320.

Robards, J., & Berrington, A. (2016). The fertility of recent migrants to England and Wales. *Demographic Research, 34,* 1037–1052. https://doi.org/10.4054/DemRes.2016.34.36

Rumbaut, R. G., & Weeks, J. R. (1986). Fertility and adaptation: Indochinese refugees in the United States. *International Migration Review, 20,* 428–466.

Saarela, J., & Elo, I. T. (2016). Forced migration in childhood: Are there long-term health effects? *SSM–Population Health, 2,* 813–823. https://doi.org/10/gfknft

Saarela, J., & Finnäs, F. (2009). Forced migration and mortality in the very long term: Did Perestroika affect death rates also in Finland? *Demography, 46,* 575–587.

Saarela, J., & Finnäs, F. (2012). Long-term mortality of war cohorts: The case of Finland. *European Journal of Population / Revue Européenne de Démographie, 28,* 1–15.

Saarela, J., & Skirbekk, V. (2019). Forced migration in childhood and subsequent fertility: The Karelian displaced population in Finland. *Population, Space and Place*, *25,* e2223. https://doi.org/10.1002/psp.2223

Sangalang, C. C., & Vang, C. (2017). Intergenerational trauma in refugee families: A systematic review. *Journal of Immigrant and Minority Health, 19,* 745–754.

Sarvimäki, M., Uusitalo, R., & Jäntti, M. (2009). *Long-term effects of forced migration* (IZA Discussion Paper No. 4003). Bonn, Germany: Institute for the Study of Labor.

Singley, S. G., & Landale, N. S. (1998). Incorporating origin and process in migration-fertility frameworks: The case of Puerto Rican women. *Social Forces, 76,* 1437–1464.

Sobotka, T., & Lutz, W. (2010). Misleading policy messages derived from the period TFR: Should we stop using it? *Comparative Population Studies, 35,* 637–664. Retrieved from http://www.comparativepopulationstudies.de/index.php/CPoS/article/view/54

Stephen, E. H., & Bean, F. D. (1992). Assimilation, disruption and the fertility of Mexican-origin women in the United States. *International Migration Review, 26,* 67–88.

Stepputat, F., & Sørensen, N. N. (2014). Sociology and forced migration. In E. Fiddian-Qasmiyeh, G. Loescher, K. Long, & N. Sigona (Eds.), *The Oxford handbook of refugee and forced migration studies*. Oxford, UK: Oxford University Press. https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199652433.001.0001/oxfordhb-9780199652433-e-036

Strang, A., & Ager, A. (2010). Refugee integration: Emerging trends and remaining agendas. *Journal of Refugee Studies, 23,* 589–607.

Tønnessen, M., & Wilson, B. (2019). *Visualising immigrant fertility: Profiles of childbearing and their implications for migration research* (SRRD No. 2019:23). Stockholm, Sweden: Stockholm University, Demography Unit. https://doi.org/10.17045/sthlmuni.9778529.v1

Torrisi, O. (2020). Armed conflict and the timing of childbearing in Azerbaijan. *Population and Development Review, 46,* 501–556.

Toulemon, L. (2004). Fertility among immigrant women: New data, a new approach. *Population & Societies, 400,* 1–4. Retrieved from https://www.ined.fr/fichier/s_rubrique/18833/publi_pdf2_pop_and_soc_english_400.en.pdf

Toulemon, L. (2006, March–April). *Fertility among immigrant women in France: New data, a new approach*. Paper presented at the annual meeting of the Population Association of America, Los Angeles, CA.

Toulemon, L., & Mazuy, M. (2004). *Comment prendre en compte l'âge à l'arrivée et la durée de séjour en France dans la mesure de la fécondité des immigrants?* [How to take into account age at arrival and length of stay in France when measuring the fertility of immigrants] (INED Report No. 120). Retrieved from https://www.ined.fr/fichier/s_rubrique/19426/120.fr.pdf

UNHCR. (2016). *Global trends: Forced displacement in 2015* (Report). Geneva, Switzerland: United Nations High Commissioner for Refugees. Retrieved from http://www.unhcr.org/uk/576408cd7.pdf

UNHCR. (2019). *Global report: 2019*. Geneva, Switzerland: United Nations High Commissioner for Refugees. Retrieved from https://reporting.unhcr.org/sites/default/files/gr2019/pdf/GR2019_English_Full_lowres.pdf

UNHCR, UNICEF, & World Food Programme. (2013). *Vulnerability assessment of Syrian refugees in Lebanon: 2013 report*. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/VASyRreportFinal11-12-13.pdf

UNICEF. (2014). *Joint nutrition assessment: Syrian refugees in Lebanon* (Report). Retrieved from https://data2.unhcr.org/en/documents/download/39744

Verwimp, P., Osti, D., & Østby, G. (2020). Forced displacement, migration, and fertility in Burundi. *Population and Development Review, 46,* 287–319.

Verwimp, P., & Van Bavel, J. (2005). Child survival and fertility of refugees in Rwanda. *European Journal of Population / Revue Européenne de Démographie, 21,* 271–290.

Waller, L., Berrington, A., & Raymer, J. (2014). New insights into the fertility patterns of recent Polish migrants in the United Kingdom. *Journal of Population Research, 31,* 131–150.

Waris, H., Jyrkilä, V., Raitasuo, K., & Siipi, J. (1952). *Siirtoväen sopeutuminen: Tutkimus Suomen Karjalaisen siirtoväen sosiaalisesta sopeutumisesta* [Adaptation of the migrant population: A study of social adjustment among the Karelian migrant population in Finland]. Helsinki, Finland: Otava Publishing.

Williams, J., Ibisomi, L., Sartorius, B., Kahn, K., Collinson, M., Tollman, S., & Garenne, M. (2013). Convergence in fertility of South Africans and Mozambicans in rural South Africa, 1993–2009. *Global Health Action, 6,* 19236. https://doi.org/10.3402/gha.v6i0.19236

Wilson, B. (2013, June). *Disentangling the quantum and tempo of immigrant fertility*. Paper presented at the 7th International Conference on Population Geographies, Groningen, the Netherlands.

Wilson, B. (2019). Understanding how immigrant fertility differentials vary over the reproductive life course. *European Journal of Population, 36,* 465–498.

Wilson, B., Goisis, A., & Aradhya, S. (2019, April). *The impact of early parenthood on the integration of childhood refugees*. Paper presented at the annual meeting of the Population Association of America, Austin, TX.

Wilson, B., & Sigle-Rushton, W. (2014, June). *A conceptual framework for migrant fertility*. Paper presented at the European Population Conference, Budapest, Hungary.

Wolf, K. (2016). Marriage migration versus family reunification: How does the marriage and migration history affect the timing of first and second childbirth among Turkish immigrants in Germany? *European Journal of Population, 32,* 731–759.

Zarate, A., & de Zarate, A. U. (1975). On the reconciliation of research findings of migrant–nonmigrant fertility differentials in urban areas. *International Migration Review, 9,* 115–156.

Zhang, L. (2011). *Springer series on demographic methods and population analysis: Vol. 27. Male fertility patterns and determinants*. Dordrecht, the Netherlands: Springer Science+Business Media. https://doi.org/10.1007/978-90-481-8939-7

Ziersch, A., & Due, C. (2018). A mixed methods systematic review of studies examining the relationship between housing and health for people from refugee and asylum seeking backgrounds. *Social Science & Medicine, 213,* 199–219.

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