

Armed Conflict, Conflict-Related Sexual Violence, and First Union Timing in Uganda

Guerschom Mugisho^{1,2,3}

¹ New York University Abu Dhabi, Division of Social Science, United Arab Emirates

² Paris 1 Panthéon-Sorbonne University, CRIDUP, Paris, France

³ Université Evangélique en Afrique, Bukavu, Democratic Republic of the Congo

Email: gmm9888@nyu.edu

Abstract

Despite attention to the demographic consequences of armed conflict, quantitative research on how conflict, particularly conflict-related sexual violence (CRSV), affects union formation remains limited. This study examines how armed conflict and CRSV are associated with first union formation in Uganda, where 49% of women had married before age 18 in 2011 and two decades of armed conflict were accompanied by CRSV. Data from the 2016 Uganda Demographic and Health Survey ($n = 18,506$ women aged 15–49) were combined with georeferenced conflict data from the Uppsala Conflict Data Program and CRSV data from GEO-SVAC. Fixed-effects linear probability models were estimated to account for time-invariant individual characteristics, as well as age and year effects. Exposure to armed conflict was associated with a lower probability of entering a first union in the same year, while exposure to CRSV in the previous year was associated with a lower probability of union formation. Sensitivity analyses suggest that the association between armed conflict and union formation may reflect conflict dynamics extending across multiple years and anticipatory responses to worsening security conditions rather than events occurring in a specific year. These findings indicate that the timing and temporal dynamics of conflict and CRSV exposure are relevant to understanding union formation in conflict-affected settings. Policies should strengthen economic opportunities and mental health support for women affected by conflict and CRSV, as delayed union formation may prolong dependence on family and adversely affect mental health when women cannot marry when they wish or face family pressure to marry.

Keywords: conflict, conflict-related sexual violence, union, marriage, Uganda

Introduction

Union formation represents a pivotal life-course transition for individuals (Brien & Sheran, 2003). It also marks a transition toward greater independence from the parental unit, even though generations remain socially and economically interdependent (Ikamari, 2005). For society, it brings together individuals from different families and constitutes the formation of a unit of production and consumption, as well as a unit for the exchange of goods and services (Quisumbing & Hallman, 2003). Armed conflict is likely to influence the timing of union formation with important consequences across multiple aspects of women's lives (Shemyakina, 2013). When conflict leads to earlier union formation, it could accelerate childbearing or increase lifetime fertility, limit educational and employment opportunities, increase economic dependence, and heighten social, psychological, and reproductive health risks (John & Nitsche, 2025; Vikram et al., 2025; Xian & Liu, 2026). When conflict delays union formation, it could postpone childbearing and reduce lifetime fertility while potentially extending educational and economic opportunities (Korinek et al., 2026; Kwon & Sohn, 2023; Xian & Liu, 2026); at the same time, it could increase social pressure, stigma, and psychological distress (Carlson, 2012). Thus, understanding how conflict shapes the timing of union formation is important for assessing its broader demographic, socioeconomic, psychosocial, and health consequences. Such knowledge is essential for informing public policies related to social protection, education, and post-conflict reconstruction (Shemyakina, 2013; Thiede et al., 2020).

An extensive body of research has examined the relationship between conflict and union formation, yet the findings remain mixed (Jayaraman et al., 2008; Sieverding et al., 2020; Torrisi, 2022). On the one hand, conflict may accelerate union formation through forced marriage, sexual slavery, the pursuit of intimate partnerships during periods of insecurity, and school dropout (Mugisho, 2024; Serneels & Verpoorten, 2015). On the other hand, it may delay union formation by separating potential spouses, increasing male mortality, reducing employment opportunities, and causing income loss (Jayaraman et al., 2008; Sieverding et al., 2020; Torrisi, 2022). Moreover, the effects of conflict on union formation—whether immediate or delayed, short- or long-term—depend on the socio-economic and demographic context of each country as well as on the specific characteristics of the conflict itself (Krafft et al., 2024). These contextual differences in the effects of conflict on union formation underscore the importance of examining this relationship in Uganda, where it has not yet been investigated.

Uganda provides an appropriate context for examining the relationship between conflict and union formation. First, unions occurred relatively early in Uganda during the study period. In 2007, Uganda was ranked as the ninth country globally where women enter unions at a young age (Jain & Kurz, 2007). Approximately 49% of Ugandan women were married before the age of 18 in 2011 (Uganda Bureau of Statistics [UBOS] & ICF International, 2012). According to Nalwadda et al. (2010), over 30% of Ugandan women had at least one child before the age of 18 due to early unions. Furthermore, during periods of conflict, both rebels and members

of the regular army resorted extensively to CRSV (conflict-related sexual violence), including forced marriages and sexual slavery (Ssenyonjo, 2005). As Kramer (2012) notes, half of the girls abducted by rebels were either forcibly married or subjected to sexual slavery.

This study makes an original contribution to the literature by examining the associations of armed conflict and CRSV with the timing of union formation in Uganda. While previous research has extensively examined the relationship between conflict and union formation, including among adolescent women, no study has empirically assessed the distinct association between CRSV and union formation among women across adolescence and adulthood. Furthermore, to my knowledge, no prior research has examined the associations of armed conflict or CRSV with child or adult marriage in Uganda, a country marked by high levels of early marriage, forced unions, and sexual slavery during conflict (Kramer, 2012). By combining individual-level data with georeferenced contextual data, this study provides a detailed analysis of how exposure to armed conflict and CRSV differently shapes union formation. The central research question is: Were armed conflict in general, and CRSV in particular, related to the timing of first union in Uganda?

Background

Existing Evidence and Development of Hypotheses

The literature suggests that armed conflict can shape union formation in upward and downward directions, during conflict and in its aftermath (Krafft et al., 2024; Torrisi, 2022). These contrasting effects may operate through several mechanisms (Staveteig, 2011), two of which are particularly relevant to this study: socioeconomic shocks and conflict-related sexual violence (CRSV). Building on Becker's (1973) conceptualization of the marriage market, DiGiuseppe and Haer (2023) classify factors influencing union formation into those affecting the *supply* of marriage—why households marry off their daughters—and those shaping the *demand* for marriage—why men choose to marry. Building on this framework, this review examines how conflict-related socioeconomic shocks and CRSV influence union formation through the supply or demand side of the marriage market and specifies the temporal dimension through which these mechanisms operate, whether during or after conflict. This temporal distinction is particularly relevant to the modeling strategy adopted in this study, which explicitly assesses both contemporaneous and short-run (lagged) effects of conflict and CRSV.

Conflict, socioeconomic shocks, and union formation. A distinctive aspect of armed conflicts is the economic and social instability they generate (Stewart & FitzGerald, 2000). The economic shocks include, among other things, the destruction of infrastructure, the collapse of local markets, the loss of livelihoods and employment, declines in agricultural production, currency devaluation, the breakdown of public finance systems, capital flight, and interruptions in access to international aid (Mercier et al., 2020; Serneels & Verpoorten, 2015; Stewart & FitzGerald, 2000). The social shocks include, among others, the forced displacement of populations, the

breakdown of social cohesion, interruptions in education, the erosion of institutions, parental loss, and deteriorating mental health (Akbulut-Yuksel et al., 2024; Heuveline & Clague, 2024; Koning, 2024; Korinek et al., 2025). These shocks can either inhibit or promote union formation.

On the one hand, these shocks potentially reduce union formation by constraining both the demand for and supply of unions. On the demand side, job loss, limited employment opportunities, asset depletion, rising consumer prices, high rental costs, excess male mortality, and poverty may reduce the demand for union formation, making it more difficult for individuals to afford or enter into a union (DiGiuseppe & Haer, 2023; Shemyakina, 2013). Consistent with these mechanisms, Clifford et al. (2010) documented declining marriage rates in Tajikistan between 1992 and 1997, attributing this trend to rising consumer prices. Similarly, in Ethiopia, particularly in Addis Ababa, the fertility decline following the Eritrean–Ethiopian War was in part driven by reduced union formation associated with high rental costs and poverty among young people (Gurmu & Mace, 2008). Evidence from Rwanda and Russia indicates that conflict-induced shortages of men delayed women’s entry into unions and reduced marriage rates (Brainerd, 2017; Jayaraman et al., 2009; Pollet et al., 2009). Caudillo and Lee (2023) found that a recent increase in local homicide rates was associated with delayed first marriage among less-educated women in Mexico. The authors attributed this association to reduced male marriageability, reflected in fewer employed men per woman at the municipal level, and reduced social interactions due to fear of victimization. On the supply side, increased marriage-related costs, insecurity, female out-migration, and disruptions to family and social networks can reduce women’s and their families’ willingness or ability to enter marriage. For instance, women of marriageable age during the Tajikistan conflict were less likely to marry, partly because of migration (Shemyakina, 2013), while exposure to war-related violence during adolescence in Azerbaijan (1992–1996) was associated with a lower risk of teenage marriage, particularly among forcibly displaced women (Torrisi, 2022). Conflict may likewise disrupt social networks, making it harder to meet potential spouses and reducing the pool of potential partners (Wood, 2008).

On the other hand, conflict-related shocks may increase both the demand for and supply of unions. This can occur through resource losses among potential husbands or the families of potential wives, transactional relationships—in which sex is exchanged for money, protection, or basic survival—and informal partnerships (Turshen & Twagiramariya, 1998). While men’s loss of resources may reduce the demand for formal unions, women and their families’ search for financial or physical security may increase the supply of informal or formal unions. Valente (2011) found that exposure to civil conflict in Nepal increased the likelihood of early female marriage. In settings with episodic conflict, households may use early marriage to stabilize consumption and cope with adverse economic conditions (Becker, 1973; Rosenzweig & Stark, 1989). For instance, in rural Tanzania, adverse household shocks during adolescence were associated with a higher probability of early marriage among girls (Corno & Voena, 2023).

Similarly, [Jarallah \(2022\)](#) further found that Lebanese and Palestinian women and their families used marriage as a protective strategy during wartime, particularly when threats to women's safety made continued education seem infeasible or irrelevant. Conflict may also increase the availability of potential partners. For example, displacement can bring individuals into closer contact in refugee camps ([Stites et al., 2022](#)).

These contrasting effects of armed conflict on union formation highlighted above may emerge during conflict or persist into the post-conflict period. Studies examining contemporaneous effects include those by [Rodgers and Thornton \(1985\)](#), [Clifford et al. \(2010\)](#), [Valente \(2011\)](#), [Gurmu and Mace \(2008\)](#), [Jarallah \(2022\)](#), and [Stites et al. \(2022\)](#). Studies examining post-conflict effects include [Shemyakina \(2013\)](#), [Torrise \(2022\)](#), and [Caudillo and Lee \(2023\)](#).

Given the ambivalent effects of conflict on union formation, I formulate two competing hypotheses: exposure to conflict delays women's entry into a first union in Uganda ($H_{1.0}$), and exposure to conflict accelerates women's entry into a first union in Uganda ($H_{1.1}$).

Conflict-related sexual violence and union formation. Sexual violence is a common feature of many African conflicts, with 43% of conflicts involving conflict-related sexual violence (CRSV) perpetrated by opposing parties ([Cohen & Nordås, 2014](#)). Survivors of CRSV may experience rejection by their families and communities ([Kohli et al., 2013](#)), compelling them to marry quickly as a means of regaining social acceptance ([Mulumeoderhwa, 2016](#)). Moreover, in many societies, CRSV may be perceived as compromising a woman's sexual purity or family reputation, further increasing pressure to enter a union. They may be pressured into, or may voluntarily accept, marriage with their perpetrator in order to restore family honor or avoid social stigma ([Kinyanda et al., 2010](#); [Kramer, 2012](#)). These pressures reflect broader social norms surrounding sexuality, marriage, and family honor ([Kelly et al., 2017](#); [Rubini et al., 2023](#)). Such mechanisms may expand the supply of marriage and, consequently, influence union formation shortly after victimization. Accordingly, I hypothesize that exposure to CRSV is associated with an earlier timing of first union (hypothesis $H_{2.0}$).

However, other mechanisms may operate in the opposite direction. Survivors of sexual violence often experience high levels of psychological trauma, including symptoms of posttraumatic stress disorder and depression, which may affect their willingness or ability to form and maintain intimate relationships ([Dossa et al., 2015](#)). In addition, the stigma associated with rape may reduce marriage opportunities if survivors are perceived as less desirable partners ([Cherlin et al., 2004](#); [Delker et al., 2020](#)). Because the psychological trauma resulting from CRSV, including symptoms of posttraumatic stress disorder and depression, may persist over time ([Woldetsadik et al., 2022](#)), its consequences for intimate relationships and union formation may emerge gradually rather than immediately.

Beyond these individual mechanisms, CRSV may also shape community perceptions and marriage-market conditions. Studies have shown that periods of armed conflict are often accompanied by increases in other forms of sexual violence perpetrated by non-combatants ([Svallfors,](#)

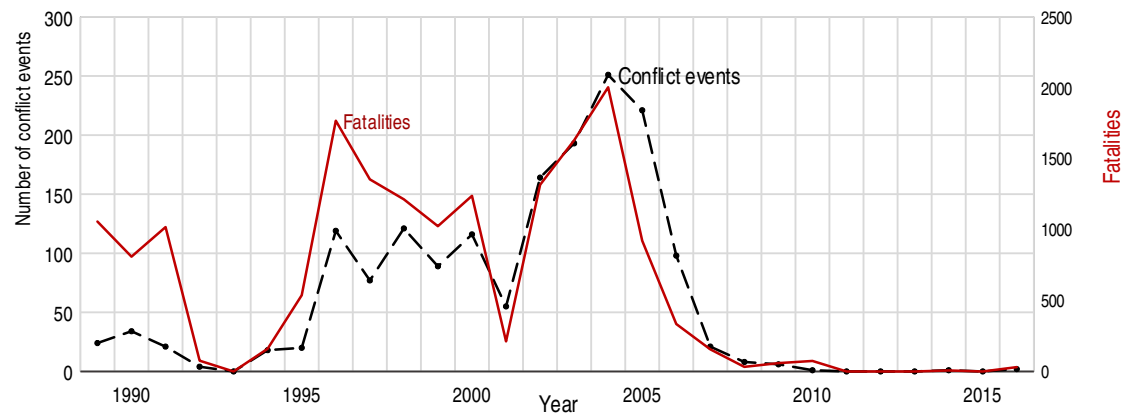
2020), meaning that high levels of CRSV may reflect a broader environment in which sexual violence is more prevalent (Alexandre & Moke Mutondo, 2022). Because individual victimization is often concealed or unknown, potential spouses and their families may rely on community-level perceptions when making marriage decisions. Women living in heavily affected communities may therefore face reduced marriage prospects due to concerns about sexual victimization, family reputation, or the perceived risk of sexually transmitted infections, regardless of whether they were directly victimized (Omba Kalonda et al., 2013). Consequently, CRSV may influence individual union formation through contextual processes operating at the community level (Rubini et al., 2023). The diffusion of community perceptions regarding sexual victimization, family reputation, and marriage prospects may require time to influence marriage-market decisions; suggesting that the effects of these mechanisms on union formation are likely to be delayed rather than immediate. I therefore hypothesize that exposure to CRSV is associated with delayed entry into a first union in Uganda (hypothesis $H_{2.1}$).

The Ugandan Context

The conflicts in Uganda span a period of two decades, with the most intense violence concentrated in the northern regions and culminating between 1995 and 2005 (see Figures 1 and 2). Uganda's recent conflicts have featured two major rebellions (Dolan, 2000). The first, the Bush War (1981-1986), was the war that brought Museveni to power in 1986. The second, the Lord's Resistance Army (LRA), is the most enduring and deadly, having begun in 1987 as a challenge to President Museveni's rule. The LRA insurgency in northern Uganda unfolded in several phases from the late 1980s through the mid-2000s and involved widespread attacks on civilians, forced displacement, abductions, and killings (Dolan, 2000; Dunn, 2004; Ssenyonjo, 2005). By the early 2000s, more than 1 million people had been forcibly displaced internally (Bell & Huebler, 2011). The LRA also perpetrated widespread sexual violence, including physical sexual assault, torture of sexual organs, sexual slavery and forced marriage, particularly against abducted women and girls (Kramer, 2012). Abducted women were distributed to soldiers and commanders as compensation for their service (Kramer, 2012). Forced marriages also helped LRA leaders control their forcibly recruited forces (Kramer, 2012; Pham & Vinck, 2007). The peace process began in 2005 with the withdrawal of LRA forces from Sudan to the Democratic Republic of the Congo (Pham & Vinck, 2007).

The conflict unfolded in a society where union formation typically begins at young ages. Although relatively low, the median age at first union increased from 17 years in 1988 to 18.7 years in 2016 (Figure 3). Union formation tends to begin earlier in rural areas. In Uganda, unions are formed through either marriage or cohabitation (Mujuzi, 2013). Customary marriages are the most prevalent, with approximately 80% of married women in such unions (UBOS & ICF International, 2012). Cohabitation was also common, increasing from 14% in 2006 to 27% in 2011 and 30% in 2016 (Mujuzi, 2013). Although child marriage is legally prohibited, it remained

Figure 1: Trends in Conflict Events and Fatalities (Best Estimates) in Uganda, 1989–2015



Note. This figure displays trends in the number of conflict events (left axis) and conflict-related fatalities (right axis) in Uganda from 1989 to 2015, based on data from the Uppsala Conflict Data Program Georeferenced Event Dataset (UCDP-GED). Both conflict events and fatalities remain relatively low in the early 1990s, increase sharply from the mid-1990s onward, and peak in the early 2000s (around 2003–2004), with fatalities showing more pronounced fluctuations. After 2006, coinciding with the launch of the peace process, the frequency of conflict events and related fatalities declines sharply, reaching very low levels and remaining minimal through 2015.

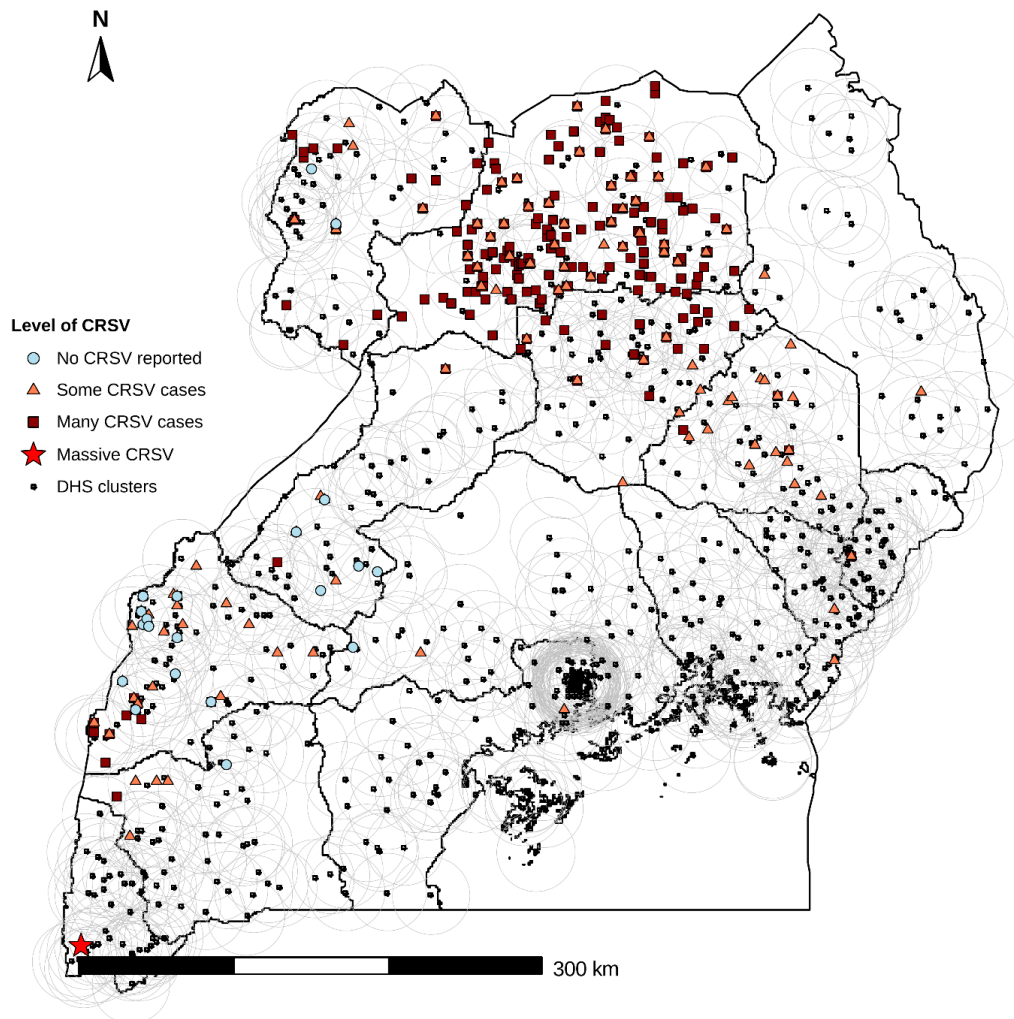
prevalent due to entrenched customary practices and varied across regions (UBOS & ICF International, 2012).

Data and Methods

This study used three data sources. Individual-level sociodemographic data for women were obtained from the 2016 Uganda Demographic and Health Survey (DHS). The survey employed a two-stage cluster sampling design. In the first stage, 697 enumeration areas (162 urban and 535 rural) were selected from the 2014 National Population and Housing Census. In the second stage, a household listing was conducted in each of the 697 accessible enumeration areas. All women aged 15–49 who had slept in the household the night before the survey were eligible for interview. Of the 20,880 eligible women, 18,506 were successfully interviewed (UBOS & ICF, 2018). The variables included in the analysis contained no missing values (UBOS & ICF, 2018). The 2016 survey was selected over earlier rounds because it included information on mobility.

Conflict data were obtained from the Uppsala Conflict Data Program Georeferenced Event Dataset (UCDP-GED; Pettersson & Öberg, 2020). UCDP-GED data were used instead of the Armed Conflict Location & Event Data Project (ACLED) because ACLED, which is available only from 1997 onward, does not sufficiently capture earlier periods of conflict (Eck, 2012). The data collection procedures, as well as the strengths and limitations of the dataset, were described in detail by Eck (2012) and Sundberg and Melander (2013). In UCDP-GED, a conflict event refers to the use of armed force by an organized actor against another organized actor or civilians, resulting in at least one direct death, based on the best, low, or high estimate for a specific location and period (Sundberg & Melander, 2013). Consistent with prior research (Krafft et al., 2024; Mugisho, 2025b), this study used the best estimates of conflict-related deaths.

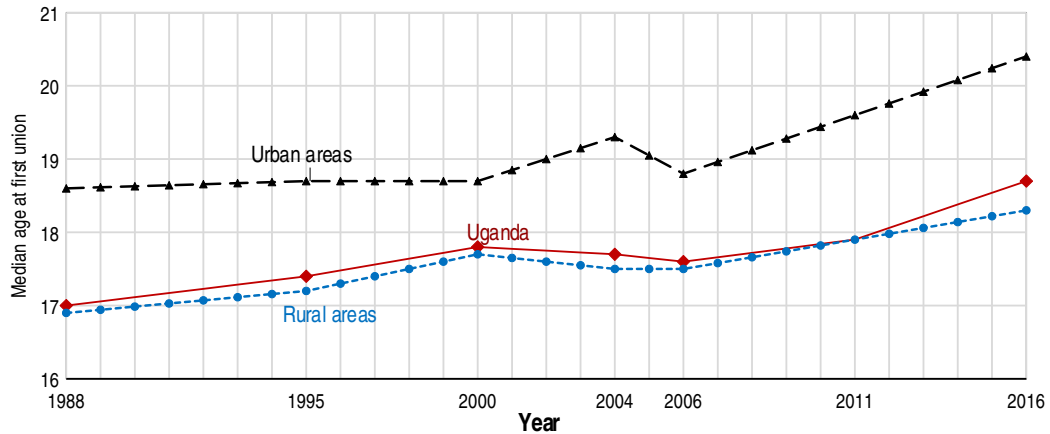
Figure 2: Prevalence of Sexual Violence During Conflicts in Uganda and Survey Clusters of the 2016 Demographic and Health Survey (DHS)



Note. This figure presents the spatial locations of the 2016 Uganda Demographic and Health Survey (DHS) clusters, along with their 25-km buffer radii, and the spatial distribution of conflict events and conflict-related sexual violence (CRSV). The main analyses use a 50-km buffer; 25-km buffers are shown for readability. Smaller black dots denote the geographic locations of DHS survey clusters. Each large dot represents a conflict event and is colored according to the level of CRSV reported during the event, ranging from no sexual violence to massive sexual violence, as indicated in the legend. Data are from the 2016 Uganda DHS and the GEO-SVAC dataset.

Women's exposure to CRSV during armed conflict was measured using the GEO-SVAC dataset (Cohen & Nordås, 2014). This dataset provided georeferenced and time-stamped information on armed conflicts worldwide from 1989 to 2009, as well as the intensity of CRSV associated with each conflict event. CRSV intensity was coded on an ordinal scale ranging from 0 to 3 (none, some, numerous, and massive). Due to extensive data processing operations (e.g., aggregation by cluster and year), I employed a dichotomous measure (exposed vs. non-exposed). The GEO-SVAC dataset documented multiple forms of sexual violence, including rape, sexual slavery, forced prostitution, forced pregnancy, forced abortion or sterilization, genital mutilation, and sexual torture. These data were compiled from reports produced by the U.S. Department of State, Amnesty International, and Human Rights Watch (Bahgat, 2016;

Figure 3: Trends in the Median Age at First Union Among Women Aged 25–49 in Uganda, by Urban and Rural Residence



Note. The solid line refers to all women in Uganda, the long-dashed line to urban residents, and the short-dashed line to rural residents; diamonds indicate survey estimates. The y -axis represents the median age at first union, and the x -axis represents the year of the survey. The upward trend in the median age over time indicates that women in Uganda are increasingly entering their first union at later ages. Estimates for 1988, 1995, 2000, 2006, 2011, and 2016 are from the DHS, whereas the 2004 estimate is from the sero-behavioral survey.

Cohen & Nordås, 2014).

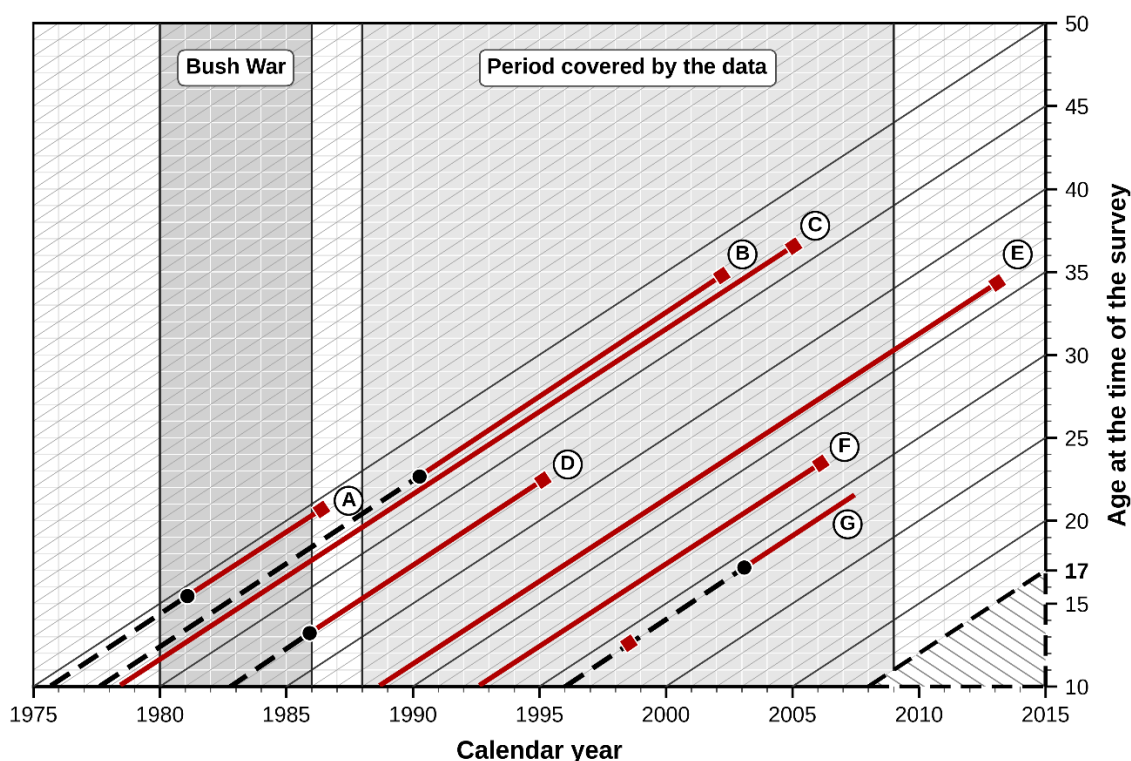
The DHS includes a geographic dataset containing survey cluster coordinates and identifiers, which were used to merge the geographic and individual-level DHS data. These data were subsequently merged with the UCDP-GED data (which shares a common identifier with the GEO-SVAC data) using geographic coordinates. I ensured that each DHS cluster-year observation corresponded to the matching cluster-year observation in the UCDP-GED and GEO-SVAC datasets. A 50 km radius around the clusters was used for the spatial join. The R packages *sf*, *rgdal*, and *raster* were utilized. This larger buffer zone offered several advantages. First, it mitigated geocoding errors and classification errors resulting from DHS cluster displacement of up to 2 km in urban areas, 5 km in rural areas, and 10 km for 1% of clusters (Boyle et al., 2020). Second, it captured indirect effects of conflict beyond conflict sites, including economic disruption, poverty, and exposure to deaths among family and community members (Torrìsi, 2020). Finally, forced displacement in northern Uganda was overwhelmingly internal to the conflict-affected region, as civilians were relocated to government “protected villages” established in trading centers within their own sub-counties and districts (Dolan, 2000). A wide buffer zone accommodates this pattern by assigning the same exposure status to all clusters within the buffer. This reduces bias arising from incomplete migration histories (Bocquier, 2016). However, it could also increase misclassification between exposed and unexposed clusters (Luetke et al., 2026). Given this trade-off, I used a 25-km buffer in the sensitivity analyses.

Sample Selection and Description

To account for residential mobility, the observation period for each woman began in the year she moved into the survey cluster, based on the reported number of years she had lived in

that cluster at the time of the survey. This approach was preferred to excluding women who had moved because it preserved sample size and estimation precision. However, it may have underrepresented women who moved into the cluster earlier because they entered the sample only after settling in their current residence cluster (Schoumaker, 2001). It also assumed no conflict exposure prior to settlement. This assumption is strong, as women who reached age 10 before 1986 may have been exposed to earlier conflicts, including the Bush War (see Figure 4). Nevertheless, the modeling strategy adopted in this study helps account for time-invariant unobserved factors, including prior conflict exposure, that may influence union formation.

Figure 4: Lexis Diagram Illustrating Sample Selection From the 2016 DHS for Modeling the Association Between Conflict and Union Formation in Uganda



Note. This graph, known as a Lexis diagram, situates demographic events and population counts along three temporal dimensions: age, period (or calendar year), and cohort. Observation years appear on the horizontal axis (read vertically), ages on the vertical axis (read horizontally), and cohorts along the diagonals. The survey was conducted in 2016 among women aged 15–49. The large shaded area represents the period during which conflict and CRSV data are available (1989–2009), which is the timeframe covered by the study. The areas to the left and right of this section represent the left and right truncations applied due to missing data. The hatched triangle at the bottom right represents individuals under the age of 17 at the time of the survey who were excluded due to truncation or missing conflict data (ages 15–16) or because they were not surveyed (ages 0–14). Each lifeline (A–G), composed of one to three segments, illustrates a possible scenario. Dashed segments indicate periods spent outside the survey cluster of residence. Dots indicate the year of settlement in that cluster. Solid segments represent the period between settlement and union formation. Squares indicate the year of union formation. For instance, Individual B reached exact age 10 in 1977, entered the survey cluster in 1990 at age 22 (completed years), and was observed for 12 years until union formation in 2002 at age 34 (completed years).

The wide-format DHS records were restructured into person-period data, enabling the analysis of individual and contextual characteristics that varied over time. Figure 4 illustrates the construction of the analytical sample and the application of the study’s inclusion and exclusion

criteria. Women entered observation when they reached age 10, settled in their cluster of residence, or in 1989, whichever occurred last (Cases B–F). Observation ended at union formation or, if union formation had not occurred, at the end of the study period in 2009 (right censoring). Women whose unions occurred before 1989 (943 women) were excluded because their conflict exposure occurred before the observation window, when conflict indicators were unavailable (left truncation; Case A). Women who settled before 1989 but remained at risk entered observation in 1989 (left truncation; Cases C and D). Women who formed a union before settling in their cluster of residence at the time of the survey were also excluded because their union formation could not be linked to conflict exposure in that cluster (Case G). Observations from 2010 to 2015 (47,449 women-years) were removed (right truncation; Case E) because conflict and CRSV data were unavailable. Therefore, women who settled in the survey cluster before 2009 but formed a union after 2009 were considered not to have experienced the event during the study period and were right-censored in 2009 (Case E). Women younger than age 17 at the time of the survey were excluded because they could not contribute observations during the study period. Observation began at age 10, the earliest age at first union observed in the data. The final analytical sample included 15,903 women, contributing a total of 106,461 woman-years of observation.

The sample was fairly evenly distributed across regions, with the highest proportion of women residing in South Buganda (9.2%) and the lowest in Karamoja (4.1%). Most women lived in rural areas (76%). Over half of the women (56%) were exposed to conflict at least once during the study period, whereas a smaller share (24%) were exposed to CRSV at least once during the same period.

Variables

Union formation was defined to include both nonmarital cohabitation and legal marriage (Sassler & Lichter, 2020). Age at union formation was measured using the survey question, “How old were you when you first married or began living with a man?” For each woman, the dependent variable was coded as 0 for all person-years in which no union occurred and as 1 for the person-year in which union formation took place.

The explanatory variables included exposure to conflict and CRSV. A woman was considered exposed to conflict or CRSV in a given year if conflict or CRSV occurred within her residential cluster or within a 50-km radius of the cluster. In the primary analyses, dichotomous measures of conflict and CRSV exposure (exposed vs. non-exposed) were used. Sensitivity analyses incorporated alternative measures of conflict exposure, including the count of conflict events (transformed into an ordinal categorical variable) and the number of direct fatalities (also transformed into an ordinal categorical variable).

I included year-fixed effects ($\text{Year}_{i,t}$) to remove the influence of period-specific factors (such as economic fluctuations, policy changes, or social transformations) that may affect first union

Table 1: Description of the Sample Size (Weighted)

Variable	Categories	<i>n</i> (%)
Region	Kampala	1,174 (7.4)
	South Buganda	1,456 (9.2)
	North Buganda	1,209 (7.6)
	Busoga	1,273 (8.0)
	Bukedi	1,007 (6.3)
	Bugisu	811 (5.1)
	Teso	1,154 (7.3)
	Karamoja	651 (4.1)
	Lango	1,031 (6.5)
	Acholi	927 (5.8)
	West Nile	1,083 (6.8)
	Bunyoro	1,044 (6.6)
	Tooro	1,120 (7.0)
	Ankole	1,128 (7.1)
	Kigezi	835 (5.3)
Place of residence	Urban	3,886 (24.0)
	Rural	12,017 (76.0)
Exposed to conflict at least once	No	7,033 (44.0)
	Yes	8,870 (56.0)
Exposed to CRSV at least once	No	12,081 (76.0)
	Yes	3,822 (24.0)
Total		15,903 (100.0)

Note. This table presents the sample distribution by region, place of residence, and exposure to conflict and CRSV. Values are *n* (%), where *n* is the category-specific sample size (frequency) and percentages are calculated relative to the total analytical sample (*N* = 15,903).

formation. This approach helps control for changes common to all individuals in a given year, allowing for more consistent and interpretable estimates of the effects of conflict and CRSV (Mummolo & Peterson, 2018). The year variable was operationalized as discrete one-year intervals, with each interval representing a specific calendar year in which a woman was considered to be at risk of entering a first union.

Year-fixed effects do not account for age effects, since women belong to different birth cohorts (see Figure 4). To address this, I included age dummies ($\text{Age}_{i,t}$) to flexibly capture the influence of age—specifically, the changing probability of entering a first union with increasing age—on first union formation. Age fixed effects served several purposes: (1) by specifying the baseline hazard, they captured the non-linear association, regardless of its functional form, between age and the probability of first union formation, (2) they controlled for unobserved characteristics that vary systematically with age, and (3) they reduced potential confounding of the estimated effects of conflict and CRSV by age-related patterns. Age was measured as each respondent's age in each year of observation. For women whose observations were not left-truncated, age was measured beginning at age 10 and increased by one year at each subsequent time point until

first union formation or 2009, whichever came first. For women who entered the risk set later because of left truncation, age was measured from the year observation began and increased by one year at each subsequent time point, up to first union formation or 2009, whichever came first.

Analytic Strategy

The Kaplan–Meier curves, together with the log-rank test, were used as descriptive tools to examine differences in the timing of union formation across explanatory variables measured on a qualitative scale.

A linear fixed-effects probability model incorporating both contemporaneous values of the explanatory variables and their one-year lagged counterparts was employed. The linear probability model was selected for its interpretability, as it allowed direct estimation of changes in probability associated with each explanatory variable. Furthermore, this model is particularly efficient in accommodating fixed effects, allowing for the control of unobserved time-invariant heterogeneity (Timoneda, 2021). In addition, unlike fixed-effects logistic regression, the fixed-effects linear probability model retains women with no within-individual variation in union status, preserving information from right-censored cases. Ignoring these observations may introduce selection bias, underestimate the timing of first union, and reduce the effective sample size and statistical power (Donoghoe & Gebski, 2017; Watt et al., 1996). A Hausman specification test indicated a systematic difference between the fixed- and random-effects estimates ($p < .001$), suggesting that unobserved time-invariant characteristics were correlated with the explanatory variables and violated a key assumption of the random-effects model. The fixed-effects model controlled for these unobserved time-invariant variables that, because of their correlation with the error term (endogeneity), could introduce bias into coefficient estimates, commonly referred to as omitted variable bias. In this study, the fixed-effects model mitigated bias arising from unaccounted-for prior exposure to conflict among some women—specifically, those who reached age 10 before 1986—who may have experienced conflict (e.g., the Bush War) before the study period (see Figure 4).

The fixed-effects model estimates only longitudinal, or within-woman, associations. The models therefore addressed the following question: What was the probability that a woman in cluster C1 entered a first union during periods when the cluster was exposed to conflict or CRSV, compared with periods when the same cluster was not exposed (within-woman association), rather than comparing the probability of first union formation between women living in an exposed cluster (C1) and those living in a non-exposed cluster (C2) (between-woman association)? In other words, each individual served as their own control over time (Allison, 2009). Including both conflict and CRSV in the same model allows for estimation of the association of each with union formation, net of the other. Because GEO-SVAC codes CRSV for each conflict event, exposure to CRSV necessarily implies exposure to conflict. The conflict coefficient there-

fore captures the association of conflict exposure without CRSV, whereas the CRSV coefficient captures the additional association of exposure to conflict accompanied by CRSV.

The baseline model was specified as follows:

$$y_{ijt} = \alpha_i + \beta_1 \text{Conflict}_{j,t} + \beta_2 \text{Conflict}_{j,t-1} + \beta_3 \text{CRSV}_{j,t} + \beta_4 \text{CRSV}_{j,t-1} + \text{Age}_{i,t} + \text{Year}_t + \varepsilon_{i,j,t} \quad (\text{Equation 1})$$

Then, interaction terms between the contemporaneous and lagged measures of exposure to conflict and CRSV and calendar year (in the form of indicator variables) were added into a second model:

$$\begin{aligned} y_{ijt} = & \alpha_i + \beta_1 \text{Conflict}_{j,t} + \beta_2 \text{Conflict}_{j,t-1} + \beta_3 \text{CRSV}_{j,t} + \beta_4 \text{CRSV}_{j,t-1} \\ & + \sum_{k \neq k_0} \beta_{5k} (\text{Conflict}_{j,t} \times \text{Year}_k) + \sum_{k \neq k_0} \beta_{6k} (\text{Conflict}_{j,t-1} \times \text{Year}_k) \\ & + \sum_{k \neq k_0} \beta_{7k} (\text{CRSV}_{j,t} \times \text{Year}_k) + \sum_{k \neq k_0} \beta_{8k} (\text{CRSV}_{j,t-1} \times \text{Year}_k) \\ & + \text{Age}_{i,t} + \text{Year}_t + \varepsilon_{i,j,t} \end{aligned} \quad (\text{Equation 2})$$

where y_{ijt} is a binary indicator equal to 1 if woman i in cluster j entered a first union during year t , and 0 otherwise; its expected value corresponds to the conditional probability of entering a first union in year t , given that no union had occurred before. The term α_i denotes woman-specific fixed effects, which are eliminated by the within transformation. The variables $\text{Conflict}_{j,t}$ and $\text{Conflict}_{j,t-1}$ capture conflict exposure at time t and $t - 1$, respectively, while $\text{CRSV}_{j,t}$ and $\text{CRSV}_{j,t-1}$ measure exposure to CRSV at time t and $t - 1$. The coefficients β_1 and β_2 represent the contemporaneous and lagged associations between conflict exposure and the probability of union formation, respectively, whereas β_3 and β_4 capture the corresponding associations for CRSV exposure. The term $\text{Age}_{i,t}$ includes fixed effects for age (dummy variables), while Year_t accounts for period fixed effects (dummy variables). Because age equals calendar year minus year of birth, and year of birth is absorbed by α_i , the linear components of age and period effects cannot be separately identified; one additional age or year dummy was therefore omitted. This normalization does not affect the estimates of β_1 to β_4 . In Equation 2, Year_k is an indicator equal to 1 if $t = k$, and k_0 denotes the reference year. The coefficients β_{5k} to β_{8k} are year-specific interaction terms, so that β_1 to β_4 refer to the reference year k_0 , and the association of contemporaneous conflict exposure in year k is given by $\beta_1 + \beta_{5k}$ (and similarly for the other exposure measures). $\varepsilon_{i,j,t}$ is the error term, which varies across individuals, DHS clusters, and observation periods. Regression models were estimated without sampling weights. Because the analysis relies on woman fixed effects, the estimates are identified from within-woman changes over time, while time-invariant characteristics related to the DHS sampling design are absorbed by the fixed effects (Solon et al., 2015).

Contemporaneous conflict measures were included, as conflicts and CRSV can either accelerate (e.g., through forced marriages) or delay (e.g., postponement of planned marriages) union

formation in the same year they occur. Lagged measures were also incorporated, recognizing that the mechanisms through which conflicts influence union formation may operate with a temporal lag. For instance, the economic devastation caused by war can affect subsequent union entry by disrupting local economies even after hostilities subside (Krafft et al., 2024). Incorporating both contemporaneous and lagged measures of explanatory variables mitigates specification bias, which can sometimes lead to sign reversals in coefficient estimates (Allison, 2015, 2022). Variables exhibiting perfect multicollinearity were automatically omitted by Stata during model estimation. Multicollinearity among the remaining independent variables was assessed using the variance inflation factor (VIF), with no evidence of severe multicollinearity (minimum VIF = 1.04, mean VIF = 2.00, median VIF = 1.58, maximum VIF = 3.64).

The Stata command *xtreg* with the *fe* option was employed to estimate fixed-effects models. This command implements the within transformation, which eliminates the individual-specific, time-invariant component of the error term—that is, the effects of all time-invariant individual-specific factors, whether observed or unobserved and whether included in the model or not. The Wooldridge test indicated first-order serial correlation ($p = .005$). All models were therefore estimated with standard errors clustered at the DHS cluster level, the level at which conflict and CRSV exposure are measured (Abadie et al., 2023). This accounts for both serial dependence within women, whose person-years all fall within a single cluster, and correlation in union formation outcomes among women living in the same cluster.

Results

Bivariate Analysis of Union Formation Timing by Conflict and CRSV Exposure

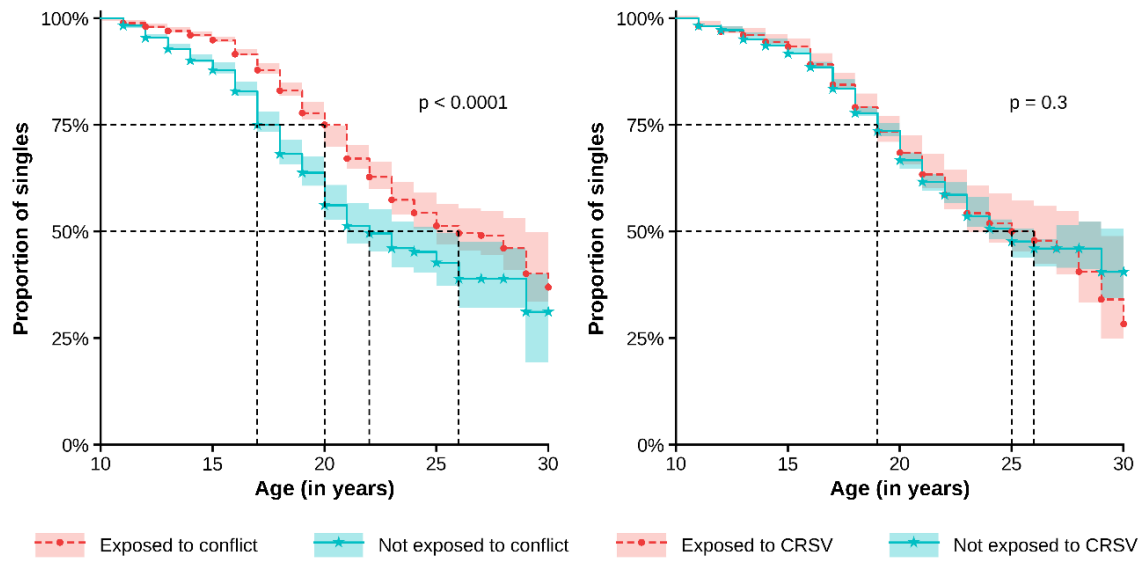
The timing of union formation by exposure to conflict and CRSV is illustrated in Figure 5, Panels A and B. Women exposed to conflict at least once experienced later union formation, with a median age at union of 26 years, compared with a median age of 22 years among women who were not exposed to conflict. In contrast, exposure to CRSV was not associated with a statistically significant difference in union timing. The survival curves for women exposed to CRSV and those not exposed intersected, indicating that the effect of CRSV exposure varied over time and thus violated the proportional hazards assumption. This pattern also underscored the limitations of the conflict and CRSV measures used in this descriptive analysis.

Associations of Conflict and CRSV With First Union Timing

The results of the fixed-effects models examining the contemporaneous and lagged effects of conflict and CRSV exposure on the probability of first-union formation in Uganda are presented in Figure 6, with the corresponding coefficients reported in Table S1.

Two main findings emerged. First, exposure to conflict during a given year was negatively associated with the likelihood of entering a first union in that same year ($\beta = -0.013$, $p < .001$; Figure 6, Panel A, or Table S1). Second, exposure to CRSV in the previous year was negatively

Figure 5: Marriage Timing by Exposure to Conflict (Panel A, Left) and Exposure to CRSV (Panel B, Right)



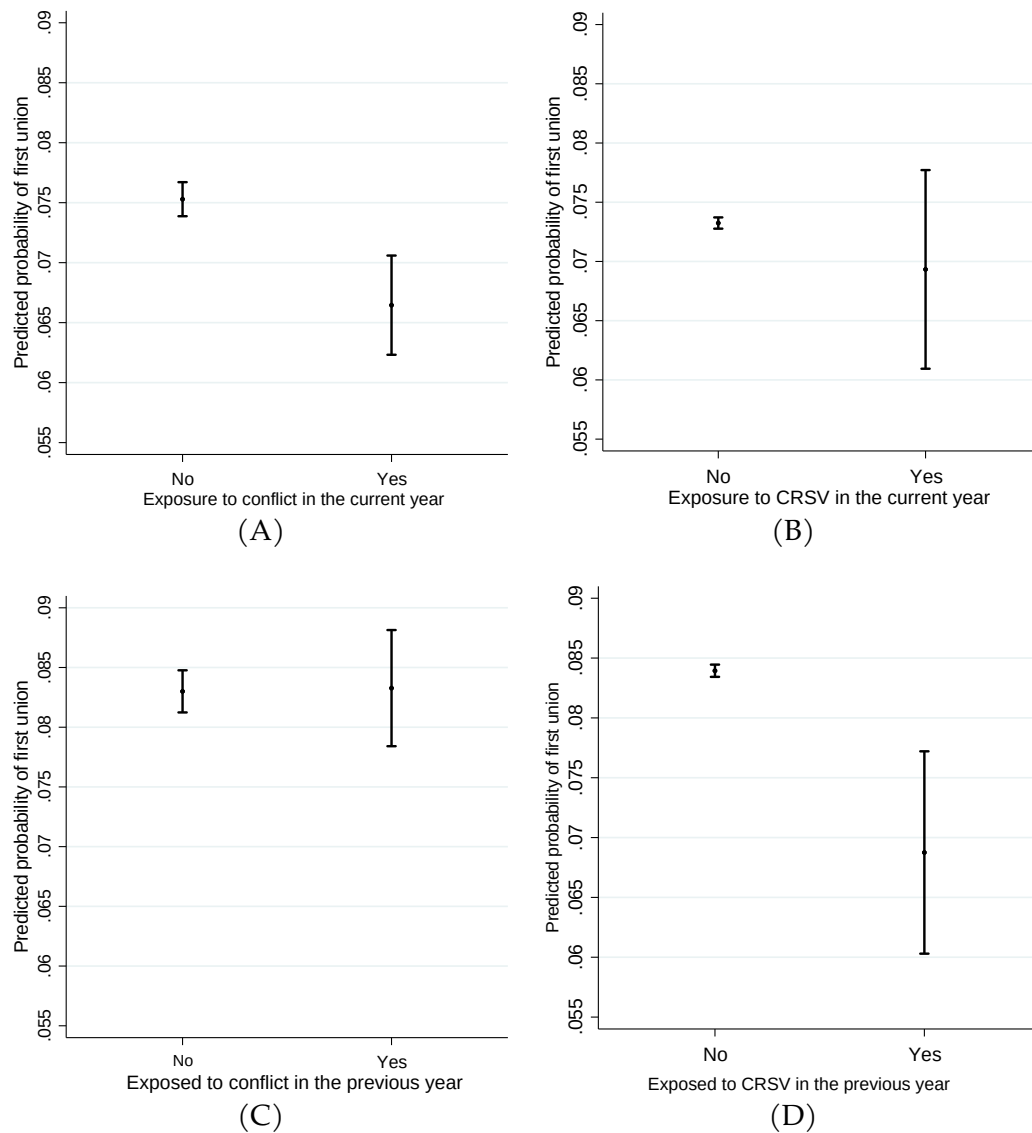
Note. Panel A (left) compares the timing of first union by conflict exposure, while Panel B (right) compares it by CRSV exposure. Dashed curves represent exposed individuals and solid curves those not exposed. The x-axis represents age in years, starting at age 10, and the y-axis shows the proportion of individuals who remain single at each age. The survival curves, estimated using the Kaplan–Meier estimator, depict the proportion of individuals remaining single at each age. The shaded areas represent 95% confidence intervals. The horizontal dashed line at 50% marks the median survival threshold, and the corresponding point on the x-axis indicates the median age at first union. A lower survival curve indicates an earlier age at first marriage. The p values shown in the figures are derived from the log-rank test and indicate whether differences in marriage timing between individuals exposed and not exposed to conflict or CRSV are statistically significant. Conflict and CRSV exposure vary over time. However, for this descriptive analysis, individuals are classified as exposed to conflict (or CRSV) if they experienced conflict (or CRSV) at least once during the entire observation period. These curves are descriptive and subject to immortal time bias.

associated with the likelihood of entering a first union in the current year ($\beta = -0.013, p = .011$; Figure 6, Panel D, or Table S1). There was no statistically significant association between conflict exposure in a previous year and the likelihood of entering a first union in the current year ($\beta = 0.001, p = .691$; Figure 6, Panel C, or Table S1). Similarly, there was no statistically significant association between contemporaneous exposure to CRSV and the likelihood of entering a first union ($\beta = -0.003, p = .632$; Figure 6, Panel B, or Table S1).

The results for the age and year fixed effects, both of which were statistically significant, indicated that the likelihood of entering a first union varied substantially by age and across time periods.

I sought to examine how the associations of conflict and CRSV with union formation changed over time. To this end, I analyzed the interaction between contemporaneous measures of exposure to conflict and CRSV and time (see Figure 7, Panels A and B). The negative association between conflict exposure and the probability of union formation was more pronounced before 1998 (Figure 7, Panel A), specifically during the first and second phases of the Lord's Resistance Army attacks. However, within a given cluster, periods of CRSV exposure were

Figure 6: Lagged and Contemporaneous Associations of Conflict and CRSV With the Probability of First Union in Uganda

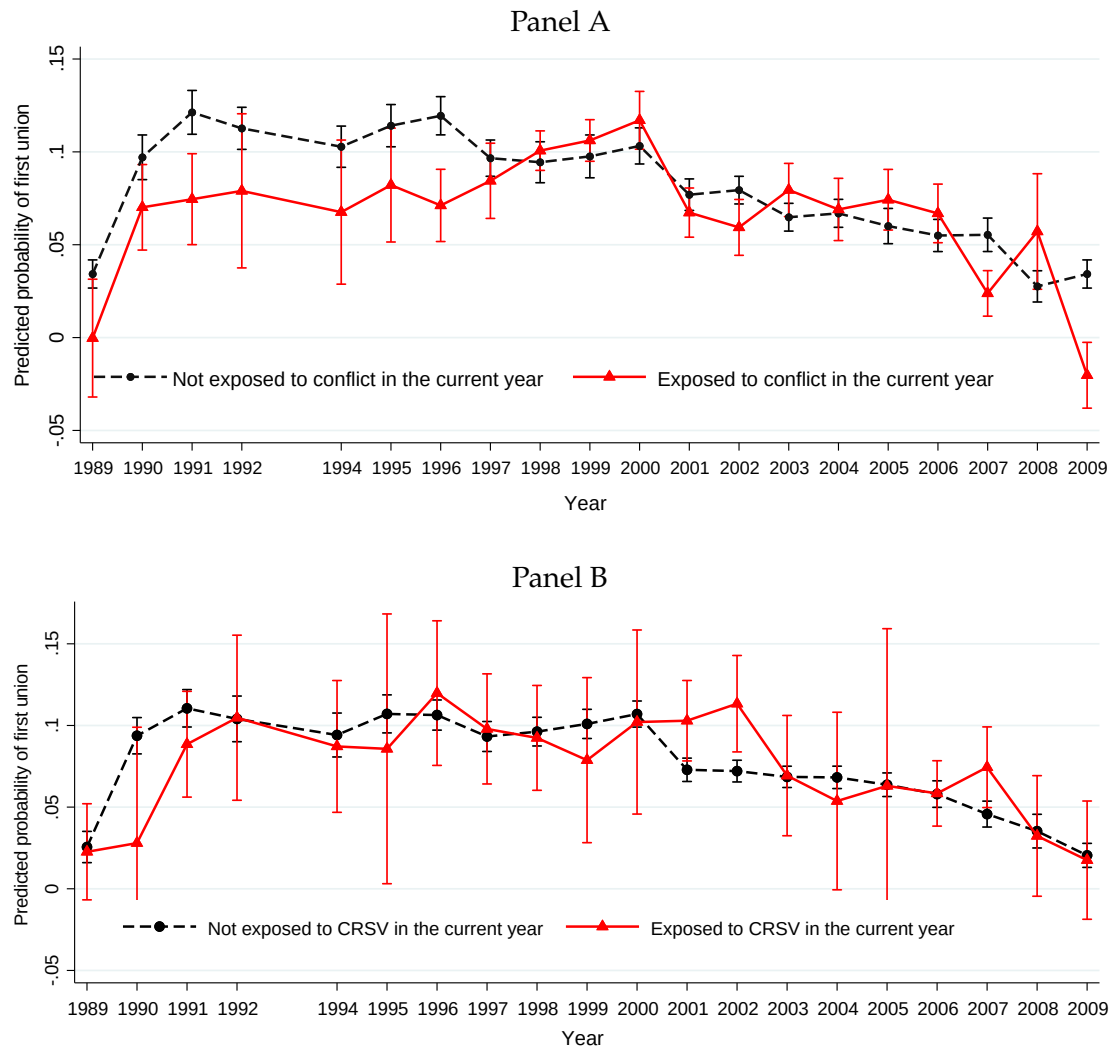


Note. These figures display the probability (average marginal predictions) of entering a first union, derived from a linear probability model that includes contemporaneous and lagged measures of conflict and CRSV, with controls for age and calendar-year fixed effects. The upper panels (A, left; B, right) present predicted probabilities by exposure to conflict and CRSV, respectively, in the current year, whereas the lower panels (C, left; D, right) present predicted probabilities by exposure to conflict and CRSV, respectively, in the previous year. In each panel, the *x*-axis distinguishes individuals not exposed (“No”) and exposed (“Yes”) to conflict or CRSV, and the *y*-axis shows the predicted probability of entering a first union. Points represent predicted probabilities, and vertical bars indicate their confidence intervals. Because the data are in event-history format, each predicted probability represents the conditional probability of entering a first union in a given year, assuming that the individual has not entered a union before that year and conditional on their covariate values. These probabilities reflect year-specific transition risks rather than cumulative probabilities over the observation period.

not associated with a significantly different temporal pattern in the probability of first union formation compared with periods without CRSV exposure (Figure 7, Panel B). Overall, the likelihood of entering a union was higher before 2000 but began to decline from 2001 onward (Figure 7, Panel B; Figure 3).

I also examined the interaction between calendar year and lagged measures of conflict and

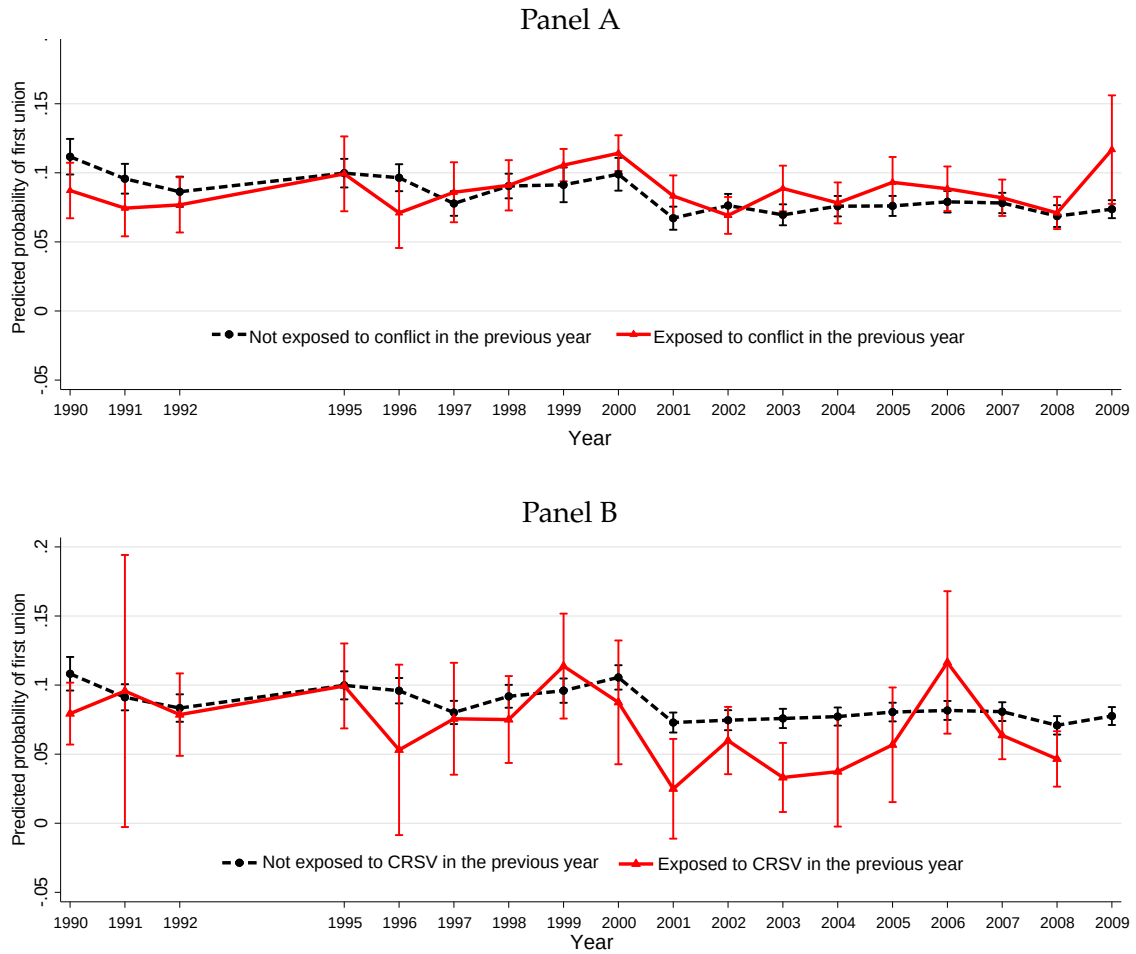
Figure 7: Predicted Probability of First Union Formation Associated With the Interaction Between Conflict Exposure (Panel A, Upper) and CRSV (Panel B, Lower) in the Current Calendar Years in Uganda



Note. These figures display the predicted probabilities (average marginal predictions) of entering a first union based on the interactions between exposure to conflict or CRSV and calendar year. Panel A shows predicted probabilities by exposure to conflict in the current year interacted with calendar year, while Panel B presents predicted probabilities by exposure to CRSV in the current year interacted with calendar year. The *x*-axis represents calendar year, and the *y*-axis shows the predicted probability of entering a first union in that year. Predictions are derived from a fixed-effects linear probability model that includes contemporaneous and lagged measures of conflict and CRSV, their interactions with calendar year, and controls for age and calendar-year fixed effects. Points represent predicted probabilities for each year, and vertical bars indicate the corresponding confidence intervals. In each panel, circles and dashed lines represent the unexposed group, whereas triangles and solid lines represent the exposed group. Some predicted probabilities fall below zero, a known property of linear probability models.

CRSV (Figure 8, Panels A and B) on the probability of entering a first union. The results showed no significant interaction between exposure to conflict in the previous year and calendar year on the probability of entering a union (Figure 8, Panel A). Regarding the interaction between lagged CRSV exposure and time, the findings indicate that, overall, CRSV exposure was associated with a lower probability of first union formation. This reduced likelihood of entering union in a given year when exposed to CRSV in the previous year was particularly pronounced in 2001.

Figure 8: Predicted Probability of the Interaction Between Conflict Exposure (Panel A, Upper) and Exposure to CRSV (Panel B, Lower) in the Previous Year, and the Calendar Year, on the Likelihood of Union Formation in Uganda



Note. These figures present the predicted probabilities (average marginal predictions) of entering a first union based on the interactions between exposure to conflict or CRSV and calendar year. The upper panel (Panel A) shows predicted probabilities by exposure to conflict in the previous year interacted with calendar year, while the lower panel (Panel B) presents predicted probabilities by exposure to CRSV in the previous year interacted with calendar year. The x-axis represents calendar year, and the y-axis shows the predicted probability of entering a first union in that year. Predictions are derived from a fixed-effects linear probability model that incorporates contemporaneous and lagged measures of conflict and CRSV, their interactions with calendar year, and controls for age and calendar-year fixed effects. Points represent predicted probabilities for each year, with vertical bars indicating the corresponding confidence intervals. In each panel, circles and dashed lines represent the unexposed group, whereas triangles and solid lines represent the exposed group. Because conflict and CRSV data start in 1989, lagged exposure measures were unavailable for 1989.

Sensitivity and Additional Analyses

I conducted multiple sensitivity analyses to assess the robustness of the results to alternative methodological choices. First, following prior studies (e.g., Krafft et al., 2024), I measured conflict intensity using a four-category ordinal variable, where the first category corresponds to no deaths, and the remaining three categories represent tertiles of the distribution of conflict events, divided into low, medium, and high intensity. In keeping with the primary analyses, I considered a 50 km radius around the DHS survey clusters. The results are presented in Table S2. Consistent with the findings in Table S1, medium ($\beta = -0.017, p < .001$) and high ($\beta =$

$-0.019, p < .001$) levels of exposure to conflict in a given year were associated with a lower probability of entering a union in that same year. Similarly, exposure to CRSV in the previous year was associated with a reduced probability of entering a union in the current year ($\beta = -0.013, p = .013$).

Second, I measured conflict exposure using the number of conflict events occurring within a 50 km radius around the DHS survey clusters. As in the previous approach, I transformed the number of conflict events into a four-category ordinal measure, where the first category represented no conflict and the remaining three corresponded to tertile-based categories. The results presented in [Table S3](#) were very similar to those reported in [Table S2](#) and to the main results reported in [Table S1](#). Specifically, exposure to a low ($\beta = -0.009, p = .018$) or medium ($\beta = -0.013, p = .018$) count of conflict events in a given year was associated with a lower probability of entering into a union in that same year. In addition, exposure to CRSV in the previous year was associated with a lower probability of union formation in the current year ($\beta = -0.012, p = .022$).

Third, I estimated separate regressions for contemporaneous and lagged conflict measures, as done in some earlier studies ([Krafft et al., 2024](#)). Although this approach generally does not allow a clear disentanglement of the contemporaneous and lagged effects of conflict ([Allison, 2015, 2022](#)), I nonetheless estimated models including either contemporaneous effects ([Table S4](#)) or one-year lagged effects ([Table S5](#)). The specification using contemporaneous conflict measures showed that exposure to conflict in a given year was associated with a significantly lower probability of entering into a union in that same year ($\beta = -0.010, p = .001$), while contemporaneous exposure to CRSV did not reach statistical significance ($\beta = -0.004, p = .420$). The specification using lagged measures produced similar patterns: exposure to conflict in the previous year showed no significant association with the probability of entering into a union in the current year ($\beta = 0.000, p = .948$), whereas exposure to CRSV in the previous year was associated with a lower probability of entering into a union in the current year ($\beta = -0.011, p = .030$). Overall, the contemporaneous and lagged estimates aligned closely with those from the main analyses ([Table S1](#)), supporting a specification that allows for both contemporaneous and lagged associations.

Fourth, I estimated fixed-effects models that included both contemporaneous and lagged measures of conflict and CRSV, with one- and two-year lags ([Table S6](#)). The results, consistent with those reported in [Table S1](#), show that exposure to conflict in a given year was associated with a significantly lower probability of entering into a union in that same year ($\beta = -0.016, p < .001$). By contrast, exposure to conflict in the previous year ($\beta < 0.001, p = .991$) and two years earlier ($\beta < 0.001, p = .940$) showed no significant association with union formation in the current year. For CRSV, contemporaneous exposure was not significantly associated with the probability of entering a union ($\beta < 0.001, p = .993$), whereas exposure to CRSV in the previous year was associated with a reduced probability of entering a union in the current year ($\beta =$

−0.016, $p = .018$). However, exposure to CRSV two years earlier was not statistically significant ($\beta = -0.007$, $p = .281$). Taken together, these results further support the robustness of the main model specification.

Fifth, I measured conflict and CRSV exposure using a 25 km radius around the DHS survey clusters instead of the original 50 km radius. The results (Table S7 or Figure S1, Panel A) indicate, consistent with Figure 6, that conflict exposure in the current year was negatively associated with the timing of union formation within the same year ($\beta = -0.015$, $p < .001$). This finding suggests that the impact of conflict on women's likelihood of entering into a union extends beyond a 25 km buffer zone. Similarly, exposure to CRSV in the previous year remained negatively associated with union formation, with an effect estimate comparable in magnitude to that observed in the main analysis ($\beta = -0.010$, $p = .053$; Table S7 or Figure S1, Panel B). The weaker statistical evidence may reflect the smaller number of women classified as exposed under the narrower 25-km buffer. Overall, the results provide further support for the robustness of the estimated association across alternative spatial definitions of exposure. The analysis of interactions between exposure to conflict in the current year within a 25-km buffer zone around DHS clusters and calendar year (Figure S2) yielded results comparable to those of the main analyses using a 25-km buffer around DHS clusters.

Sixth, I assessed the effects of conflict and CRSV on union formation among adolescent girls (under age 20). As shown in Table S8, exposure to conflict in a given year was associated with a lower probability of entering into a union in that year ($\beta = -0.015$, $p < .001$), whereas exposure in the previous year was not statistically significant ($\beta = 0.001$, $p = .933$). Contemporaneous exposure to CRSV was also not statistically significant ($\beta = -0.007$, $p = .622$), whereas exposure in the prior year was associated with a statistically significant reduction in the probability of union formation ($\beta = -0.010$, $p = .043$). These findings suggest that conflict and CRSV have affected union formation in a comparable manner among both adolescent girls and women of all ages.

As a final robustness check, I estimated models including lagged, contemporaneous, and future measures of conflict and CRSV (Table S9). Only future conflict exposure was associated with current union formation ($\beta = -0.018$, $p < .001$), whereas contemporaneous conflict ($\beta = -0.005$, $p = .145$) and lagged conflict ($\beta = 0.004$, $p = .260$) were not. In contrast, only lagged CRSV was significantly associated with union formation ($\beta = -0.015$, $p = .007$), whereas contemporaneous CRSV ($\beta = -0.006$, $p = .325$) and future CRSV ($\beta = 0.005$, $p = .393$) were not. These findings suggest caution in interpreting conflict effects as tied to a specific calendar year. Their implications are discussed further in the Discussion section.

Discussion and Conclusion

Combining individual-level data from the 2016 Demographic and Health Survey with georeferenced data on conflict and conflict-related sexual violence (CRSV) from the UCDP-GED

and GEO-SVAC, this study aimed to analyze the role of conflict in general, and CRSV in particular, in union formation in Uganda. This country, where widespread sexual violence and forced marriages were perpetrated by rebel groups, provides an appropriate context for examining this issue, which has not previously been addressed in this setting. Results from fixed-effects linear probability models indicate that exposure to both armed conflict and CRSV is associated with delayed first-union formation.

The first set of hypotheses concerned the association between armed conflict and union formation. Hypothesis $H_{1.0}$ posited that exposure to armed conflict would delay women's entry into a first union, whereas the competing hypothesis ($H_{1.1}$) predicted an acceleration in union formation. The results are more consistent with $H_{1.0}$ than with $H_{1.1}$: Exposure to conflict in a given year was negatively associated with the probability of entering a union during that same year. This finding was observed both for women of all ages and for unions formed during adolescence. While this result contrasts with some previous studies (Krafft et al., 2024), it is consistent with others (Jayaraman et al., 2009; Shemyakina, 2013; Torrisi, 2022). Several mechanisms may underlie this association. First, when violent events occur before planned union ceremonies, families may postpone these unions because of insecurity, displacement, or conflict-related economic hardship (Caudillo & Lee, 2023; Torrisi, 2022). The Ugandan context lends plausibility to this channel: more than 70% of the workforce depended on agriculture and services, and growth in both sectors slowed considerably during the conflict period, with agricultural growth falling below 1% by the mid-2000s (Merotto, 2020). Such disruptions likely increased economic uncertainty and constrained households' ability to finance union-related expenses. In this case, the observed decline reflects a genuine postponement of union formation. Second, union formation decisions may be influenced by expectations of worsening security conditions (Bolano & Vignoli, 2021). As violence spreads to neighboring areas or information about escalating conflict becomes available, couples and their families may delay planned unions even before violence directly affects their locality.

When lagged, contemporaneous, and future measures of conflict were included simultaneously (Table S9), only future exposure remained significantly associated with a lower probability of union formation; neither the contemporaneous nor the lagged measure was statistically significant. Several factors may explain this pattern. First, conflict exposure may be persistent over time within clusters, so exposure across adjacent years may be strongly correlated, potentially masking the individual associations of contemporaneous, lagged, and future exposure when included simultaneously in the model (Allison, 2022). The loss of the contemporaneous association therefore does not necessarily challenge the main finding. Second, measurement error in the timing of union formation relative to conflict, as well as unobserved time-varying local shocks, may also contribute to this pattern (see limitations). The data do not allow me to distinguish among these explanations. Overall, the estimates may be better interpreted as reflecting a multi-year regime of insecurity rather than associations with events occurring within

a single calendar year.

The probability of entering a union was generally higher nationwide before 2001, although it was lower among women exposed to conflict and CRSV. This elevated probability of union formation would be driven by cultural norms, including child marriage, which was particularly prevalent in northern Uganda, as well as in the districts of Kapchorwa and Palisa, and the Teso and Eastern Uganda regions (Rubimbwa et al., 2012). In these contexts, early marriage was not only socially accepted but also economically motivated, as it often represented a key source of income through bride price for families (Bantebya et al., 2014). Although the overall likelihood of union formation was higher in Uganda prior to 2001, women who were exposed to armed conflict or CRSV during this period paradoxically exhibited a lower probability of entering a union. This seemingly counterintuitive finding may be explained by the extreme conditions generated by conflict, as previously discussed—such as the impoverishment of households making marriage financially unfeasible, widespread insecurity, and short-term forced displacement during periods of violence. Beginning in 2001, the probability of union formation declined significantly at the national level among both conflict-exposed and non-exposed women. This decline likely resulted from the weakening of traditional norms and rising female school enrolment, increased female labor market participation (Bantebya et al., 2014), which reduces the desirability of forming a union. These findings indicate that union formation patterns in conflict settings are shaped not only by cultural norms but also by structural violence.

The second set of hypotheses concerned the association between CRSV and women's entry into a first union. Hypothesis $H_{2,0}$ posited that exposure to CRSV would accelerate union formation, whereas the competing hypothesis, $H_{2,1}$, predicted a delay in union formation. The results were more consistent with $H_{2,1}$ than with $H_{2,0}$: Women exposed to CRSV in the previous year were less likely to enter a union during a given year. This finding contrasts with DiGiuseppe and Haer (2023), who reported an increased risk of early marriage among women exposed to CRSV, but is consistent with qualitative evidence from conflict-affected settings, including the Democratic Republic of the Congo (Nachmani, 2024). Contrary to expectations that survivors may enter a union rapidly to regain social acceptance, restore family honor, or avoid the stigma associated with sexual victimization (Alexandre & Moke Mutondo, 2022; Omba Kalonda et al., 2013; Rubini et al., 2023), exposure to CRSV was associated with delayed union entry. Women exposed to CRSV, or living in communities heavily affected by such violence, may be perceived as less desirable partners because of concerns related to sexual victimization, family reputation, or sexually transmitted infections (Finnbakk & Nordås, 2019; Hockett et al., 2009; Weis & Borges, 1973). This interpretation is also consistent with the argument that CRSV may shape marriage-market conditions through community-level perceptions of sexual victimization, family reputation, and infection risk (Alexandre & Moke Mutondo, 2022; Claude et al., 2013). In addition, CRSV may result in post-traumatic stress, anxiety, depression, and difficulties in forming and maintaining intimate relationships (Cherlin et al., 2004; Delker et al., 2020; Woldetsadik et al.,

2022). Previous research has further shown that sexual abuse can negatively affect attitudes toward marriage and reduce preparedness for marital life (Larson & LaMont, 2005). Taken together, these findings provide greater support for the mechanisms underlying $H_{2.1}$ than for those underlying $H_{2.0}$. Specifically, they are more consistent with the argument that CRSV reduces opportunities for union formation and affects survivors' capacity or willingness to form intimate relationships than with the expectation that social pressures following victimization accelerate union formation.

The evidence from this study and its implications may extend to other contexts that share conflict patterns similar to those observed in Uganda—such as the use of forced marriage by armed groups, attacks on civilians, and mass displacement—including the Democratic Republic of the Congo, Burkina Faso, Sudan, and the Central African Republic (Cohen & Nordås, 2014)—and that exhibit comparable socioeconomic and cultural conditions shaping family formation. Moreover, as discussed earlier, the findings showing that exposure to conflict and CRSV reduced the likelihood of union formation are consistent with evidence from Tajikistan (Shemyakina, 2013), the DRC (Mugisho, 2025a), and Azerbaijan (Torrisi, 2022), suggesting that violent conflict and CRSV can delay or suppress union formation across diverse demographic settings.

Theoretically, these findings highlight the potential value of integrating gendered and psychosocial mechanisms into theories of union formation and conflict, which may overlook how CRSV can affect subsequent union formation. They also support and extend life course and social disruption theories, which posit that armed conflict interferes with normative transitions to adulthood—such as union formation—by destabilizing social structures, economic conditions, and physical security (England & Albrecht, 1984; Juárez & Gayet, 2014; Park & Stokowski, 2009).

Limitations

Although this study provides robust evidence of negative associations between conflict and CRSV and union formation in Uganda across multiple econometric specifications and alternative measures of conflict exposure, several limitations should be acknowledged. First, conflict exposure was measured by linking georeferenced conflict data to survey clusters, an approach that involves some arbitrariness in the choice of buffer zones (Brück et al., 2016). In addition, spatial correlation between neighboring clusters with overlapping 50-km buffers was not explicitly accounted for, as Conley-type spatially robust standard errors are not implemented in Stata's *xtreg, fe* command. However, results were consistent with a 25-km buffer, which substantially reduces spatial overlap. Second, this retrospective study is subject to selection and recall biases. In particular, retrospective reports of age at first union and year of settlement in the cluster are subject to recall error and age heaping, which may shift the timing of union formation relative to the conflict timeline (Pullum, 2006; Schoumaker, 2014). Third, the migration measure does not capture temporary displacement during the conflict period. However, because

conflict exposure was measured using large buffer zones (50 km), the resulting bias is likely to be limited. Fourth, because the analyses were conducted at the annual level, contemporaneous measures of conflict exposure should be interpreted cautiously. Annual measurement may create temporal misclassification by making it difficult to distinguish the timing of events that occur at different points within the same year. For example, a woman may enter a union early in the year and subsequently be exposed to conflict later that year; the annual dataset would nevertheless classify her union as occurring during a year of conflict exposure, even though union formation preceded the event. Such operationalization and timing choices are recognized challenges in linking geocoded conflict data to household survey data (Luetke et al., 2026). Fifth, the UCDP-GED dataset includes only events from conflicts that reached at least 25 battle-related deaths in a given year. This criterion excludes many nonlethal violent events that may also affect union formation (Eck, 2012). Sixth, conflict exposure and union formation may be jointly influenced by unobserved time-varying factors, such as poverty, unemployment, competition over resources, or local cultural norms (Desmet et al., 2017; Goli et al., 2022). However, as discussed in the background section, the LRA insurgency—the largest conflict in Uganda—was rooted primarily in political rather than economic or cultural factors (Kramer, 2012). Finally, although the fixed-effects models control for time-invariant unobserved heterogeneity and for factors that systematically vary with age and year through age and year fixed effects, they cannot eliminate all sources of time-varying unobserved heterogeneity. In particular, the absence of time-varying contextual controls, such as local sex ratios, and unobserved local shocks, such as economic disruptions or school closures, may have affected the estimated associations.

Policy Implications

The policy implications of these findings are multifaceted. The postponement of marriage due to conflict may delay first births and, in turn, influence completed fertility in contexts of lower modern contraceptive use (Jayaraman et al., 2009). The decline in fertility observed in sub-Saharan Africa has been attributed to rising ages at marriage (Thiede et al., 2020). Previous studies have shown that women who marry before age 18 in sub-Saharan Africa have, on average, one additional child over their reproductive lifespan compared to those who marry after 18 (Onagoruwa & Wodon, 2018). This delay in marriage resulting from conflict or CRSV implies a prolonged period during which women must depend on family resources or their own capacity to provide for themselves. Promoting education and employment opportunities for women could help mitigate these adverse consequences of conflict and CRSV (Chamberlin et al., 2025; Shemyakina, 2013). These findings also underscore the importance of securing household income, particularly through employment stability and the creation of new economic opportunities, even in conflict-affected settings. Such measures could help reduce the prevalence of child marriage by alleviating the economic pressures that drive some families to marry off their daughters before the age of 18. In addition, such measures would allow both men and

women exposed to conflict and CRSV, aged 18 and older, to enter a union based on personal choice and at an appropriate time. Marrying and having children based on personal desire rather than external circumstances offers significant benefits for both individual well-being and demographic policy objectives. The ability to form a family out of personal choice, rather than as a response to economic constraints or societal pressures, enhances overall life satisfaction and psychological well-being ([Noguchi, 2023](#)). This approach aligns with rights-based population policies that prioritize autonomy and voluntary decision-making over coercion ([Barot, 2012](#)).

Online Supplement

Table S1: Fixed-Effects Model Examining the Associations of Exposure to Conflict and CRSV With the Likelihood of Entering a First Union in Uganda

Variable	Coefficient	SE	p
Exposure to conflict—Yes (Ref. = No)	−0.013 ***	0.003	< .001
Lag 1 exposure to conflict—Yes (Ref. = No)	0.001	0.003	.691
Exposure to CRSV—Yes (Ref. = No)	−0.003	0.006	.632
Lag 1 exposure to CRSV—Yes (Ref. = No)	−0.013 *	0.005	.011
Age fixed effects (Ref. = 10)			
12	−0.009 ***	0.002	< .001
13	−0.011 ***	0.003	< .001
14	−0.003	0.004	.536
15	0.022 ***	0.006	< .001
16	0.068 ***	0.008	< .001
17	0.095 ***	0.009	< .001
18	0.132 ***	0.011	< .001
19	0.140 ***	0.012	< .001
20	0.163 ***	0.014	< .001
21	0.132 ***	0.015	< .001
22	0.132 ***	0.017	< .001
23	0.129 ***	0.019	< .001
24	0.107 ***	0.021	< .001
25	0.122 ***	0.023	< .001
26	0.105 ***	0.025	< .001
27	0.074 **	0.026	.005
28	0.070 *	0.029	.016
29	0.005	0.030	.861
Year fixed effects (Ref. = 1989)			
1991	0.112 ***	0.006	< .001
1992	0.161 ***	0.008	< .001
1995	0.194 ***	0.010	< .001
1996	0.222 ***	0.011	< .001
1997	0.228 ***	0.012	< .001
1998	0.265 ***	0.014	< .001
1999	0.291 ***	0.015	< .001
2000	0.321 ***	0.016	< .001
2001	0.312 ***	0.017	< .001
2002	0.329 ***	0.018	< .001
2003	0.348 ***	0.019	< .001
2004	0.365 ***	0.020	< .001
2005	0.386 ***	0.021	< .001
2006	0.405 ***	0.022	< .001
2007	0.420 ***	0.023	< .001
2008	0.425 ***	0.024	< .001
2009	0.449 ***	0.025	< .001
Constant	−0.271 ***	0.013	< .001

Note. This table displays coefficients, standard errors (SE), and *p* values from a fixed-effects linear probability model using person–year data. The dependent variable indicates whether a first union took place in a specific year (yes/no). Explanatory variables include exposure to conflict and CRSV, both coded as yes/no, along with their 1-year lagged measures. The controls include age and calendar-year fixed effects. Coefficients represent differences in the annual probability of first union; for instance, exposure to conflict in a given year is associated with a 1.3-percentage-point lower probability of first union that year, assuming other factors remain constant. Some year coefficients are omitted due to collinearity or limited sample sizes. *N* = 15,900 women (90,558 woman-years). The sample size is not exactly 15,903 women (106,461 woman-years) because some observations and/or individuals with only 1 year of observation were dropped due to the use of lagged measures of exposure to conflict and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

†*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Table S2: Fixed-Effects Model Examining the Associations of Exposure to Conflict (Measured on an Ordinal Scale) and CRSV With the Probability of Entering Into a Union in Uganda

Variable	Coefficient	SE	p
Tertiles of contemporaneous fatalities (Ref. = no deaths)			
Low	−0.006	0.005	.194
Medium	−0.017 ***	0.004	< .001
High	−0.019 ***	0.005	< .001
Exposure to CRSV in the current year—Yes (Ref. = No)	−0.005	0.006	.367
Tertiles of deaths in the previous year (Ref. = no deaths)			
Low	0.001	0.004	.860
Medium	0.002	0.004	.722
High	0.007	0.005	.163
Exposure to CRSV in the previous year—Yes (Ref. = No)	−0.013 *	0.005	.013
Age fixed effects (Ref. = 10)			
12	−0.009 ***	0.002	< .001
13	−0.011 ***	0.003	< .001
14	−0.003	0.005	.525
15	0.022 ***	0.006	< .001
16	0.068 ***	0.008	< .001
17	0.095 ***	0.009	< .001
18	0.132 ***	0.011	< .001
19	0.140 ***	0.012	< .001
20	0.163 ***	0.014	< .001
21	0.132 ***	0.015	< .001
22	0.132 ***	0.017	< .001
23	0.129 ***	0.019	< .001
24	0.107 ***	0.021	< .001
25	0.122 ***	0.023	< .001
26	0.105 ***	0.025	< .001
27	0.074 **	0.026	.005
28	0.070 *	0.029	.016
29	0.005	0.030	.856
Year fixed effects (Ref. = 1989)			
1991	0.112 ***	0.006	< .001
1992	0.161 ***	0.008	< .001
1995	0.193 ***	0.010	< .001
1996	0.222 ***	0.012	< .001
1997	0.228 ***	0.012	< .001
1998	0.264 ***	0.014	< .001
1999	0.291 ***	0.015	< .001
2000	0.321 ***	0.016	< .001
2001	0.311 ***	0.017	< .001
2002	0.329 ***	0.018	< .001
2003	0.348 ***	0.019	< .001
2004	0.364 ***	0.020	< .001
2005	0.386 ***	0.021	< .001
2006	0.405 ***	0.022	< .001
2007	0.418 ***	0.023	< .001
2008	0.425 ***	0.024	< .001
2009	0.450 ***	0.025	< .001
Constant	−0.271 ***	0.012	< .001

Note. This table reports coefficient estimates, standard errors (SE), and *p* values from a fixed-effects linear probability model using person–year data. The dependent variable indicates whether a first union occurred in a given year. Explanatory variables are exposure to conflict (no deaths, low, medium, high) and CRSV (yes/no) within a 50-km buffer around DHS cluster points, and their 1-year lagged measures. Controls include age and calendar-year fixed effects. Coefficients represent differences in the annual probability of first union; for example, high-level conflict exposure is associated with a 1.9-percentage-point lower probability of first union, holding other factors constant. Some year coefficients are omitted due to collinearity or small sample sizes. *N* = 15,900 women (90,554 woman-years). The sample size is not exactly 15,903 women (106,461 woman-years) because some observations and/or individuals were dropped due to the use of lagged measures of exposure to conflict and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

Table S3: Fixed-Effects Model Examining the Associations of the Number of Conflict Events (Measured Using a Four-Category Ordinal Scale) and CRSV With Union Formation in Uganda

Variable	Coefficient	SE	p
Tertiles of number of contemporaneous conflict events (Ref. = no event)			
Low	−0.009 *	0.004	.018
Medium	−0.013 *	0.006	.018
High	−0.008	0.005	.110
Exposure to CRSV in the current year—Yes (Ref. = No)	−0.005	0.006	.415
Tertiles of number of conflict events in the previous year (Ref. = no event)			
Low	0.001	0.004	.947
Medium	0.006	0.006	.353
High	0.007	0.005	.178
Exposure to CRSV in the previous year—Yes (Ref. = No)	−0.012 *	0.005	.022
Age fixed effects (Ref. = 10)			
12	−0.009 ***	0.002	< .001
13	−0.011 ***	0.003	< .001
14	−0.003	0.004	.554
15	0.022 ***	0.006	< .001
16	0.068 ***	0.008	< .001
17	0.095 ***	0.009	< .001
18	0.133 ***	0.011	< .001
19	0.140 ***	0.012	< .001
20	0.163 ***	0.014	< .001
21	0.132 ***	0.015	< .001
22	0.132 ***	0.017	< .001
23	0.129 ***	0.019	< .001
24	0.107 ***	0.021	< .001
25	0.122 ***	0.023	< .001
26	0.106 ***	0.025	< .001
27	0.074 **	0.026	.005
28	0.070 *	0.029	.016
29	0.005	0.030	.862
Year fixed effects (Ref. = 1989)			
1991	0.112 ***	0.006	< .001
1992	0.162 ***	0.008	< .001
1995	0.194 ***	0.010	< .001
1996	0.222 ***	0.012	< .001
1997	0.228 ***	0.012	< .001
1998	0.264 ***	0.014	< .001
1999	0.290 ***	0.015	< .001
2000	0.320 ***	0.016	< .001
2001	0.314 ***	0.017	< .001
2002	0.328 ***	0.018	< .001
2003	0.348 ***	0.019	< .001
2004	0.364 ***	0.020	< .001
2005	0.386 ***	0.021	< .001
2006	0.405 ***	0.022	< .001
2007	0.419 ***	0.023	< .001
2008	0.426 ***	0.024	< .001
2009	0.449 ***	0.025	< .001
Constant	−0.273 ***	0.013	< .001

Note. This table presents coefficient estimates, standard errors (SE), and *p* values from a fixed-effects linear probability model based on person–year data. The dependent variable indicates whether a first union occurred in a given year. The main explanatory variables are exposure to conflict (no event, low, medium, high) and CRSV (yes/no) within a 50-km buffer of DHS cluster points, including 1-year lagged measures. Controls include age and calendar-year fixed effects. Coefficients capture differences in the annual probability of first union; for instance, medium-level conflict exposure is associated with a 1.3-percentage-point lower probability of first union, holding other factors constant. Some year coefficients are excluded due to collinearity or small sample sizes. *N* = 15,900 women (90,554 woman-years). The sample size is not exactly 15,903 women (106,461 woman-years) because some observations and/or individuals were dropped due to the use of lagged measures of exposure to conflict and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

Table S4: Fixed-Effects Model Examining the Associations of Contemporaneous Measures of Conflict and CRSV Exposure With Union Formation in Uganda

Variable	Coefficient	SE	p
Exposure to conflict—Yes (Ref. = No)	−0.010 **	0.003	.001
Exposure to CRSV—Yes (Ref. = No)	−0.004	0.004	.420
Age fixed effects (Ref. = 10)			
11	−0.012 ***	0.001	< .001
12	−0.018 ***	0.003	< .001
13	−0.018	0.004	.162
14	−0.007 ***	0.005	< .001
15	0.023 ***	0.007	< .001
16	0.065 ***	0.008	< .001
17	0.091 ***	0.009	< .001
18	0.127 ***	0.011	< .001
19	0.135 ***	0.013	< .001
20	0.156 ***	0.014	< .001
21	0.125 ***	0.016	< .001
22	0.125 ***	0.018	< .001
23	0.122 ***	0.019	< .001
24	0.099 ***	0.021	< .001
25	0.114 ***	0.024	< .001
26	0.098 **	0.025	.005
27	0.067 *	0.027	.016
28	0.065 †	0.029	.853
29	0.002	0.029	.937
Year fixed effects (Ref. = 1989)			
1991	0.118 ***	0.006	< .001
1992	0.171 ***	0.007	< .001
1995	0.203 ***	0.007	< .001
1996	0.226 ***	0.009	< .001
1997	0.251 ***	0.010	< .001
1998	0.263 ***	0.011	< .001
1999	0.265 ***	0.012	< .001
2000	0.292 ***	0.013	< .001
2001	0.314 ***	0.015	< .001
2002	0.342 ***	0.016	< .001
2003	0.328 ***	0.017	< .001
2004	0.343 ***	0.018	< .001
2005	0.359 ***	0.019	< .001
2006	0.374 ***	0.020	< .001
2007	0.392 ***	0.021	< .001
2008	0.408 ***	0.022	< .001
2009	0.419 ***	0.023	< .001
Constant	−0.275 ***	0.011	< .001

Note. This table presents coefficient estimates, standard errors (SE), and *p* values from a fixed-effects linear probability model based on person-year data. The dependent variable captures whether a first union occurred in a given year. The main explanatory variables are contemporaneous exposure to conflict (yes/no) and CRSV (yes/no) within a 50-km buffer of DHS cluster points. Controls include age and calendar-year fixed effects. Coefficients indicate differences in the annual probability of first union; for instance, conflict exposure is associated with a 1.1-percentage-point lower probability of first union, holding other factors constant. Some year coefficients are not displayed due to collinearity or small sample sizes. *N* = 15,903 women (106,461 woman-years). CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

Table S5: Fixed-Effects Model Examining the Associations of Lagged Measures of Conflict and CRSV Exposure With Union Formation in Uganda

Variable	Coefficient	SE	p
Lag 1 exposure to conflict—Yes (Ref. = No)	0.000	0.003	.948
Lag 1 exposure to CRSV—Yes (Ref. = No)	−0.011 *	0.005	.030
Age fixed effects (Ref. = 10)			
12	−0.009 ***	0.002	< .001
13	−0.011 ***	0.003	< .001
14	−0.003	0.004	.562
15	0.022 ***	0.006	< .001
16	0.068 ***	0.008	< .001
17	0.095 ***	0.009	< .001
18	0.133 ***	0.011	< .001
19	0.140 ***	0.012	< .001
20	0.163 ***	0.014	< .001
21	0.133 ***	0.015	< .001
22	0.132 ***	0.017	< .001
23	0.129 ***	0.019	< .001
24	0.107 ***	0.021	< .001
25	0.122 ***	0.023	< .001
26	0.106 ***	0.025	< .001
27	0.074 **	0.026	.005
28	0.070 *	0.029	.016
29	0.005	0.029	.853
Year fixed effects (Ref. = 1989)			
1991	0.112 ***	0.006	< .001
1992	0.163 ***	0.008	< .001
1995	0.195 ***	0.010	< .001
1996	0.222 ***	0.012	< .001
1997	0.228 ***	0.012	< .001
1998	0.261 ***	0.014	< .001
1999	0.289 ***	0.015	< .001
2000	0.321 ***	0.016	< .001
2001	0.311 ***	0.017	< .001
2002	0.328 ***	0.018	< .001
2003	0.347 ***	0.019	< .001
2004	0.365 ***	0.020	< .001
2005	0.386 ***	0.021	< .001
2006	0.404 ***	0.022	< .001
2007	0.418 ***	0.023	< .001
2008	0.427 ***	0.024	< .001
2009	0.448 ***	0.025	< .001
Constant	−0.274 ***	0.012	< .001

Note. This table presents coefficient estimates, standard errors (SE), and *p* values from a fixed-effects linear probability model based on person–year data. The dependent variable indicates whether a first union occurred in a given year. The main explanatory variables are Lag 1 exposure to conflict (yes/no) and CRSV (yes/no) within a 50-km buffer around DHS cluster points. Controls include age and calendar-year fixed effects. Coefficients capture differences in the annual probability of first union; for instance, CRSV exposure in the previous year is associated with a 1.1-percentage-point lower probability of first union, holding other factors constant. Some year coefficients are excluded due to collinearity or small sample sizes. *N* = 15,900 women (90,554 woman-years). The sample size is not exactly 15,903 women (106,461 woman-years) because some observations and/or individuals were dropped due to the use of lagged measures of exposure to conflict and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Table S6: Fixed-Effects Model Examining the Associations of Contemporaneous and Lagged (Lag 1 and Lag 2) Measures of Exposure to Conflict and CRSV With the Probability of Union Formation in Uganda

Variable	Coefficient	SE	p
Exposure to contemporaneous conflict—Yes (Ref. = No)	−0.016 ***	0.004	< .001
Lag 1 exposure to conflict—Yes (Ref. = No)	0.000	0.004	.991
Lag 2 exposure to conflict—Yes (Ref. = No)	0.000	0.004	.940
Exposure to contemporaneous CRSV—Yes (Ref. = No)	0.000	0.007	.993
Lag 1 exposure to CRSV—Yes (Ref. = No)	−0.016 *	0.007	.018
Lag 2 exposure to CRSV—Yes (Ref. = No)	−0.007	0.006	.281
Age fixed effects (Ref. = 10)			
13	−0.003	0.002	.227
14	0.002	0.004	.491
15	0.023 ***	0.005	< .001
16	0.064 ***	0.007	< .001
17	0.099 ***	0.008	< .001
18	0.137 ***	0.010	< .001
19	0.146 ***	0.011	< .001
20	0.168 ***	0.013	< .001
21	0.140 ***	0.015	< .001
22	0.140 ***	0.017	< .001
23	0.136 ***	0.018	< .001
24	0.115 ***	0.020	< .001
25	0.129 ***	0.023	< .001
26	0.113 ***	0.025	< .001
27	0.081 **	0.026	.002
28	0.077 **	0.029	.008
29	0.010	0.029	.746
Year fixed effects (Ref. = 1989)			
1992	0.104 ***	0.007	< .001
1996	0.126 ***	0.012	< .001
1997	0.160 ***	0.013	< .001
1998	0.209 ***	0.014	< .001
1999	0.249 ***	0.016	< .001
2000	0.283 ***	0.017	< .001
2001	0.274 ***	0.017	< .001
2002	0.297 ***	0.019	< .001
2003	0.319 ***	0.020	< .001
2004	0.339 ***	0.021	< .001
2005	0.365 ***	0.022	< .001
2006	0.387 ***	0.023	< .001
2007	0.406 ***	0.024	< .001
2008	0.415 ***	0.025	< .001
2009	0.443 ***	0.026	< .001
Constant	−0.256 ***	0.014	< .001

Note. This table presents coefficient estimates, standard errors (SE), and *p* values from a fixed-effects linear probability model based on person-year data. The dependent variable indicates whether a first union occurred in a given year. The explanatory variables are exposure to conflict (yes/no) and CRSV (yes/no) within a 50-km buffer around DHS cluster points, along with their 1- and 2-year lagged measures. Controls include age and calendar-year fixed effects. Coefficients capture differences in the annual probability of first union; for example, conflict exposure in a given year is associated with a 1.6-percentage-point lower probability of first union in that same year, holding other factors constant. Some year coefficients are excluded due to collinearity or small sample sizes. *N* = 15,810 women (74,640 woman-years). The sample size is not exactly 15,903 women (106,461 woman-years) because some observations and/or individuals were excluded due to the use of lagged measures of exposure to conflict and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

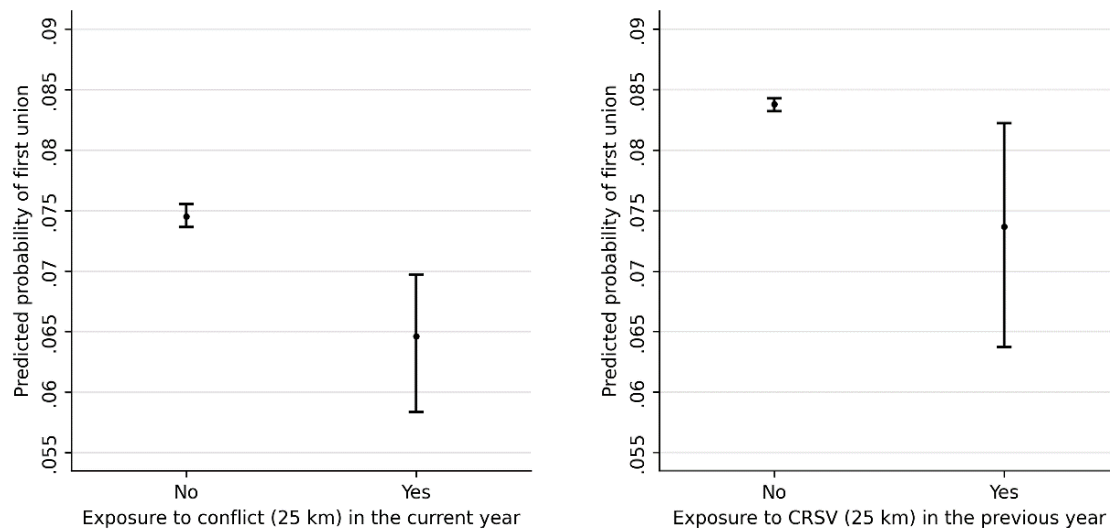
Table S7: Fixed-Effects Model Examining the Associations of Exposure to Conflict and Conflict-Related Sexual Violence Within a 25-km Buffer Radius With Union Formation in Uganda

Variable	Coefficient	SE	p
Exposure to conflict—Yes (Ref. = No)	−0.015 ***	0.004	< .001
Lag 1 exposure to conflict—Yes (Ref. = No)	0.001	0.004	.933
Exposure to CRSV—Yes (Ref. = No)	−0.007	0.006	.622
Lag 1 exposure to CRSV—Yes (Ref. = No)	−0.010 †	0.006	.053
Age fixed effects (Ref. = 10)			
12	−0.009 ***	0.002	< .001
13	−0.011 ***	0.003	< .001
14	0.013 ***	0.004	< .001
15	0.022 ***	0.006	< .001
16	0.068 ***	0.008	< .001
17	0.095 ***	0.009	< .001
18	0.133 ***	0.011	< .001
19	0.140 ***	0.012	< .001
20	0.163 ***	0.013	< .001
21	0.132 ***	0.015	< .001
22	0.132 ***	0.017	< .001
23	0.129 ***	0.019	< .001
24	0.107 ***	0.021	< .001
25	0.122 ***	0.023	< .001
26	0.105 ***	0.025	< .001
27	0.074 **	0.026	.005
28	0.070 *	0.029	.016
29	0.006	0.029	.850
Year fixed effects (Ref. = 1989)			
1991	0.114 ***	0.006	< .001
1992	0.163 ***	0.008	< .001
1995	0.196 ***	0.010	< .001
1996	0.224 ***	0.012	< .001
1997	0.230 ***	0.012	< .001
1998	0.265 ***	0.014	< .001
1999	0.292 ***	0.015	< .001
2000	0.324 ***	0.016	< .001
2001	0.313 ***	0.017	< .001
2002	0.330 ***	0.018	< .001
2003	0.350 ***	0.019	< .001
2004	0.368 ***	0.020	< .001
2005	0.388 ***	0.021	< .001
2006	0.406 ***	0.022	< .001
2007	0.421 ***	0.023	< .001
2008	0.427 ***	0.024	< .001
2009	0.452 ***	0.025	< .001
Constant	−0.291 ***	0.017	< .001

Note. This table displays coefficients, standard errors (SE), and *p* values from a fixed-effects linear probability model using person–year data. The dependent variable indicates whether a first union took place in a specific year of observation (yes/no). Explanatory variables include exposure to conflict and CRSV within a 25-km buffer around DHS cluster points, both coded as yes/no, along with their 1-year lagged measures. The controls include age and calendar-year fixed effects. Coefficients represent differences in the annual probability of first union; for instance, exposure to conflict in a given year is associated with a 1.5-percentage-point lower probability of first union that year, assuming other factors remain constant. Some year coefficients are omitted due to collinearity or limited sample sizes. *N* = 15,901 women (90,554 woman-years). The sample size is slightly smaller than 15,903 women (106,461 woman-years) because some individuals and/or observations were excluded due to the use of lagged measures of conflict exposure and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

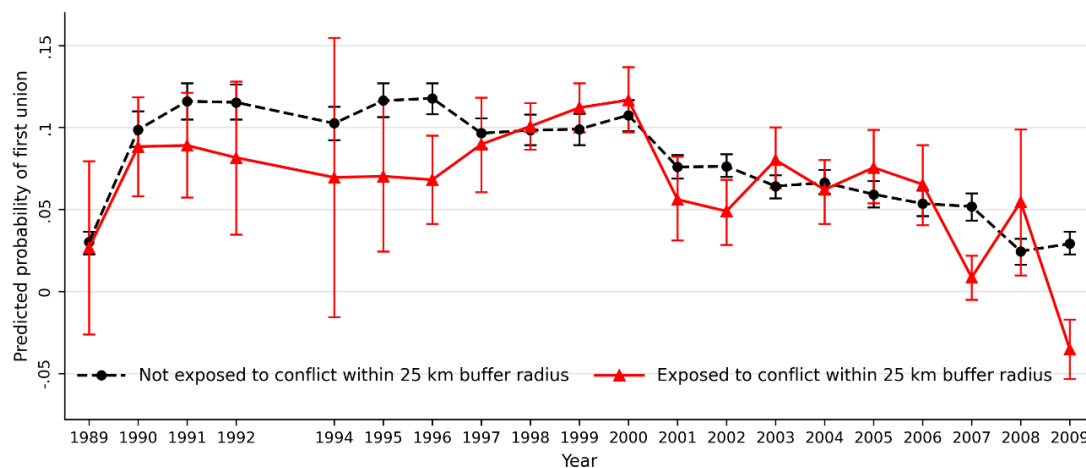
†*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Figure S1: Predicted Probability of Union Formation by Exposure to Conflict (Left) and CRSV (Right) Within a 25-km Radius of the 2016 DHS Clusters During the Current Year in Uganda



Note. This figure displays the probability (average marginal predictions) of entering a first union, derived from the linear probability model presented in Table S7, which includes contemporaneous and lagged measures of conflict and CRSV within a 25-km radius of the 2016 DHS clusters, with controls for age and calendar-year fixed effects. The left and right panels present predicted probabilities by exposure to conflict in the current year and exposure to CRSV in the current year. In each panel, the *x*-axis distinguishes individuals not exposed (“No”) and exposed (“Yes”) to conflict or CRSV, and the *y*-axis displays the predicted probability of entering a first union. Points represent predicted probabilities, and vertical bars indicate their confidence intervals. Each predicted probability represents the conditional probability (hazard) that an individual enters a first union in a given year, assuming they have not entered a union before that year and given their covariate values. These probabilities reflect year-specific transition risks rather than cumulative probabilities over the observation period. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

Figure S2: Predicted Probability of First Union by Conflict Exposure in the Current Year Within a 25-km Buffer Radius and Calendar Year in Uganda



Note. This figure presents the predicted probabilities (average marginal predictions) of entering a first union based on the interactions between exposure to conflict and calendar year. The *x*-axis represents calendar year, and the *y*-axis shows the predicted probability of entering a first union in that year. Predictions are derived from a fixed-effects linear probability model that includes contemporaneous and lagged measures of exposure to conflict and CRSV within a 25-km buffer radius, their interactions with calendar year, and controls for age and calendar-year fixed effects. Points represent predicted probabilities for each year, and vertical bars indicate the corresponding confidence intervals. Maroon estimates refer to individuals exposed to conflict, and black estimates refer to individuals not exposed to conflict. CRSV = conflict-related sexual violence.

Table S8: Fixed-Effects Model Examining the Associations of Exposure to Conflict and Conflict-Related Sexual Violence Within a 50-km Buffer Zone With Adolescent Union Formation in Uganda

Variable	Coefficient	SE	p
Exposure to conflict—Yes (Ref. = No)	−0.013 ***	0.003	< .001
Lag 1 exposure to conflict—Yes (Ref. = No)	0.000	0.003	.948
Exposure to CRSV—Yes (Ref. = No)	−0.004	0.006	.500
Lag 1 exposure to CRSV—Yes (Ref. = No)	−0.010 *	0.005	.043
Age fixed effects (Ref. = 10)			
12	0.015 ***	0.001	< .001
13	0.037 ***	0.002	< .001
14	0.070 ***	0.019	< .001
15	0.120 ***	0.004	< .001
16	0.188 ***	0.005	< .001
17	0.238 ***	0.006	< .001
18	0.300 ***	0.007	< .001
19	0.331 ***	0.008	< .001
Year fixed effects (Ref. = 1989)			
1991	0.091 ***	0.006	< .001
1992	0.116 ***	0.007	< .001
1995	0.082 ***	0.007	< .001
1996	0.088 ***	0.007	< .001
1997	0.072 ***	0.007	< .001
1998	0.086 ***	0.007	< .001
1999	0.094 ***	0.007	< .001
2000	0.100 ***	0.007	< .001
2001	0.068 ***	0.007	< .001
2002	0.062 ***	0.006	< .001
2003	0.056 ***	0.006	< .001
2004	0.047 ***	0.006	< .001
2005	0.041 ***	0.005	< .001
2006	0.032 ***	0.005	< .001
2007	0.022 ***	0.005	< .001
2008	0.002	0.005	.637
Constant	−0.078 ***	0.005	< .001

Note. This table displays coefficients, standard errors (SE), and *p* values from a fixed-effects linear probability model using person–year data. The dependent variable indicates whether a first union took place in a specific year (yes/no) before age 20. Explanatory variables include exposure to conflict and CRSV, both coded as yes/no, along with their 1-year lagged measures. The controls include age and calendar-year fixed effects. Coefficients represent differences in the annual probability of first union; for instance, exposure to conflict in a given year is associated with a 1.3-percentage-point lower probability of first union that year, assuming other factors remain constant. Some year coefficients are omitted due to collinearity or limited sample sizes. *N* = 15,900 women (90,558 woman-years). The sample size is not exactly 15,903 women (106,461 woman-years) because some observations and/or individuals were excluded due to the use of lagged measures of exposure to conflict and CRSV. CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Table S9: Fixed-Effects Model Examining the Associations of Lagged, Contemporaneous, and Future Measures of Exposure to Conflict and CRSV With the Probability of Union Formation in Uganda

Variable	Coefficient	SE	p
Exposure to contemporaneous conflict—Yes (Ref. = No)	−0.005	0.003	.145
Lag 1 exposure to conflict—Yes (Ref. = No)	0.004	0.003	.260
Future exposure to conflict—Yes (Ref. = No)	−0.018 ***	0.003	< .001
Exposure to contemporaneous CRSV—Yes (Ref. = No)	−0.006	0.006	.325
Lag 1 exposure to CRSV—Yes (Ref. = No)	−0.015 **	0.005	.007
Future exposure to CRSV—Yes (Ref. = No)	0.005	0.006	.393
Age fixed effects (Ref. = 11)			
12	−0.008 ***	0.002	< .001
13	−0.016 ***	0.003	< .001
14	−0.008 †	0.004	.064
15	0.015 **	0.005	.005
16	0.061 ***	0.007	< .001
17	0.089 ***	0.008	< .001
18	0.123 ***	0.010	< .001
19	0.136 ***	0.011	< .001
20	0.160 ***	0.013	< .001
21	0.128 ***	0.014	< .001
22	0.128 ***	0.015	< .001
23	0.123 ***	0.017	< .001
24	0.103 ***	0.018	< .001
25	0.120 ***	0.021	< .001
26	0.106 ***	0.024	< .001
27	0.066 **	0.024	.007
28	0.065 *	0.028	.018
29	—	—	—
Year fixed effects (Ref. = 1990)			
1991	0.103 ***	0.006	< .001
1995	0.167 ***	0.010	< .001
1996	0.207 ***	0.011	< .001
1997	0.226 ***	0.012	< .001
1998	0.260 ***	0.013	< .001
1999	0.286 ***	0.014	< .001
2000	0.319 ***	0.015	< .001
2001	0.310 ***	0.015	< .001
2002	0.329 ***	0.017	< .001
2003	0.346 ***	0.017	< .001
2004	0.365 ***	0.018	< .001
2005	0.387 ***	0.019	< .001
2006	0.407 ***	0.020	< .001
2007	0.417 ***	0.020	< .001
2008	0.427 ***	0.021	< .001
Constant	−0.258 ***	0.012	< .001

Note. This table presents coefficient estimates, standard errors (SE), and *p* values from a fixed-effects linear probability model. The dependent variable indicates whether a first union occurred in a given year. The explanatory variables include contemporaneous exposure to conflict (yes/no) and CRSV (yes/no), along with 1-year lagged and 1-year future measures of each exposure, all defined within a 50-km buffer around DHS cluster points. Controls include age and calendar-year fixed effects. Future exposure measures were included as a robustness check of temporal ordering. Coefficients represent differences in the annual probability of first union associated with each exposure measure, holding other variables constant. Dashes indicate a coefficient omitted from the model. *N* = 13,931 women (74,283 woman-years). CRSV = conflict-related sexual violence; DHS = Demographic and Health Survey.

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

References

- Abadie, A., Athey, S., Imbens, G. W., & Wooldridge, J. M. (2023). When should you adjust standard errors for clustering? *The Quarterly Journal of Economics*, 138(1), 1–35. <https://doi.org/10.1093/qje/qjac038>
- Akbulut-Yuksel, M., Zimmer, Z., Pandey, S., & Toan, T. K. (2024). Untold story of wartime children: Results of the Vietnam Health and Aging Study. *Population Research and Policy Review*, 43(2), Article 24. <https://doi.org/10.1007/s11113-024-09869-4>
- Alexandre, A. B., & Moke Mutondo, K. (2022). Behind the weapon of war: Sexual violence in wartime as a reflection of social attitudes towards women in peacetime. *Journal of Sexual Aggression*, 28(2), 149–163. <https://doi.org/10.1080/13552600.2021.1949500>
- Allison, P. (2009). *Fixed Effects Regression Models*. SAGE Publications, Inc. <https://doi.org/10.4135/9781412993869>
- Allison, P. (2015, February 10). *Getting the lags right*. Statistical Horizons. <https://statisticalhorizons.com/getting-the-lags-right/>
- Allison, P. (2022, October 24). *Getting the lags right—A new solution*. Statistical Horizons. <https://statisticalhorizons.com/getting-the-lags-right-a-new-solution/>
- Bahgat, K. (2016). *Geocoded Sexual Violence in Armed Conflict (GEO-SVAC) dataset codebook*. Peace Research Institute Oslo. <https://policycommons.net/artifacts/2091248/geocoded-sexual-violence-in-armed-conflict-geo-svac-dataset-codebook/2846546/>
- Bantebya, G. K., Muhanguzi, F. K., & Watson, C. (2014). *Adolescent girls in the balance: Changes and continuity in social norms and practices around marriage and education in Uganda*. Overseas Development Institute. <https://cdn.odi.org/media/documents/9180.pdf>
- Barot, S. (2012). Governmental coercion in reproductive decision making: See it both ways. *Guttmacher Policy Review*, 15(4), 7–11.
- Becker, G. S. (1973). A theory of marriage: Part I. *Journal of Political Economy*, 81(4), 813–846. <https://doi.org/10.1086/260084>
- Bell, S., & Huebler, F. (2011). *The quantitative impact of conflict on education* [Background paper prepared for the Education for All global monitoring report 2011]. UNESCO.
- Bocquier, P. (2016). Migration analysis using demographic surveys and surveillance systems. In M. J. White (Ed.), *International handbook of migration and population distribution* (pp. 205–223). Springer. https://doi.org/10.1007/978-94-017-7282-2_10
- Bolano, D., & Vignoli, D. (2021). Union formation under conditions of uncertainty: The objective and subjective sides of employment uncertainty. *Demographic Research*, 45, 141–186. <https://doi.org/10.4054/DemRes.2021.45.5>
- Boyle, E. H., King, M. L., Garcia, S., Culver, C., & Bourdeaux, J. (2020). Contextual data in IPUMS DHS: Physical and social environment variables linked to the Demographic and Health Surveys. *Population and Environment*, 41(4), 529–549. <https://doi.org/10.1007/s11111-020-00348-4>
- Brainerd, E. (2017). The lasting effect of sex ratio imbalance on marriage and family: Evidence from World War II in Russia. *The Review of Economics and Statistics*, 99(2), 229–242. https://doi.org/10.1162/REST_a_00649
- Brien, M. J., & Sheran, M. E. (2003). The economics of marriage and household formation. In S. A. Grossbard (Ed.), *Marriage and the economy: Theory and evidence from advanced industrial societies* (pp. 37–54). Cambridge University Press. <https://doi.org/10.1017/CBO9780511615863.004>

- Brück, T., Justino, P., Verwimp, P., Avdeenko, A., & Tedesco, A. (2016). Measuring violent conflict in micro-level surveys: Current practices and methodological challenges. *The World Bank Research Observer*, 31(1), 29–58. <https://doi.org/10.1093/wbro/lkv011>
- Carlson, D. L. (2012). Deviations from desired age at marriage: Mental health differences across marital status. *Journal of Marriage and Family*, 74(4), 743–758. <https://doi.org/10.1111/j.1741-3737.2012.00995.x>
- Caudillo, M. L., & Lee, J. (2023). Community violence and the stability of marriages and cohabitations in Mexico. *Social Forces*, 102(1), 287–309. <https://doi.org/10.1093/sf/soac140>
- Chamberlin, S., Pauline, L., & Krueger, P. M. (2025). Community and individual education influences on sexual and reproductive health knowledge in Uganda: A human capital and social learning perspective. *Population Research and Policy Review*, 44(4), Article 38. <https://doi.org/10.1007/s11113-025-09958-y>
- Cherlin, A. J., Hurt, T. R., Burton, L. M., & Purvin, D. M. (2004). The influence of physical and sexual abuse on marriage and cohabitation. *American Sociological Review*, 69(6), 768–789. <https://doi.org/10.1177/000312240406900602>
- 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*, 26(3), 325–350. <https://doi.org/10.1007/s10680-010-9206-x>
- Cohen, D. K., & Nordås, R. (2014). Sexual violence in armed conflict: Introducing the SVAC dataset, 1989–2009. *Journal of Peace Research*, 51(3), 418–428. <https://doi.org/10.1177/0022343314523028>
- Corno, L., & Voena, A. (2023). Child marriage as informal insurance: Empirical evidence and policy simulations. *Journal of Development Economics*, 162, Article 103047. <https://doi.org/10.1016/j.jdeveco.2023.103047>
- Delker, B. C., Salton, R., McLean, K. C., & Syed, M. (2020). Who has to tell their trauma story and how hard will it be? Influence of cultural stigma and narrative redemption on the storying of sexual violence. *PLOS ONE*, 15(6), Article e0234201. <https://doi.org/10.1371/journal.pone.0234201>
- Desmet, K., Ortuño-Ortín, I., & Wacziarg, R. (2017). Culture, ethnicity, and diversity. *American Economic Review*, 107(9), 2479–2513. <https://doi.org/10.1257/aer.20150243>
- DiGiuseppe, M., & Haer, R. (2023). The wedding bells of war: The influence of armed conflict on child marriages in West Africa. *Journal of Peace Research*, 60(3), 474–488. <https://doi.org/10.1177/00223433221080056>
- Dolan, C. J. (2000). *What do you remember? A rough guide to the war in northern Uganda 1986–2000* (COPE Working Paper No. 33). ACORD. <http://www.acord.org.uk/r-pubs-Cope%20Working%20Paper%2033.PDF>
- Donoghoe, M. W., & Gebiski, V. (2017). The importance of censoring in competing risks analysis of the subdistribution hazard. *BMC Medical Research Methodology*, 17(1), Article 52. <https://doi.org/10.1186/s12874-017-0327-3>
- Dossa, N. I., Zunzunegui, M. V., Hatem, M., & Fraser, W. D. (2015). Mental health disorders among women victims of conflict-related sexual violence in the Democratic Republic of Congo. *Journal of Interpersonal Violence*, 30(13), 2199–2220. <https://doi.org/10.1177/0886260514552447>
- Dunn, K. C. (2004). Uganda: The Lord's Resistance Army. *Review of African Political Economy*, 31(99), 139–142.
- Eck, K. (2012). In data we trust? A comparison of UCDP GED and ACLED conflict events datasets. *Cooperation and Conflict*, 47(1), 124–141. <https://doi.org/10.1177/0010836711434463>

- England, J. L., & Albrecht, S. L. (1984). Boomtowns and social disruption. *Rural Sociology*, 49(2), 230–246.
- Finnbakk, I., & Nordås, R. (2019). Community perspectives and pathways to reintegration of survivors of sexual violence in eastern Democratic Republic of Congo. *Human Rights Quarterly*, 41(2), 263–282.
- Goli, S., Mavisakalyan, A., Rammohan, A., & Vu, L. (2022). Conflicts and son preference: Micro-level evidence from 58 countries. *Economics & Human Biology*, 46, Article 101146. <https://doi.org/10.1016/j.ehb.2022.101146>
- Gurmu, E., & Mace, R. (2008). Fertility decline driven by poverty: The case of Addis Ababa, Ethiopia. *Journal of Biosocial Science*, 40(3), 339–358. <https://doi.org/10.1017/S002193200700260X>
- Heuveline, P., & Clague, A. K. (2024). Parental loss and mental health in post-Khmer-Rouge Cambodia. *Population Research and Policy Review*, 43(4), Article 50. <https://doi.org/10.1007/s11113-024-09894-3>
- Hockett, J. M., Saucier, D. A., Hoffman, B. H., Smith, S. J., & Craig, A. W. (2009). Oppression through acceptance? Predicting rape myth acceptance and attitudes toward rape victims. *Violence Against Women*, 15(8), 877–897. <https://doi.org/10.1177/1077801209335489>
- Ikamari, L. D. E. (2005). The effect of education on the timing of marriage in Kenya. *Demographic Research*, 12, 1–28. <https://doi.org/10.4054/DemRes.2005.12.1>
- Jain, S., & Kurz, K. (2007). *New insights on preventing child marriage: A global analysis of factors and programs*. International Center for Research on Women. <https://www.icrw.org/publications/new-insights-on-preventing-child-marriage/>
- Jarallah, Y. (2022). The ties that bind? Marriage formation, consanguinity and war in Lebanon and Palestine. *Journal of Population Research*, 39(1), 97–132. <https://doi.org/10.1007/s12546-022-09281-9>
- Jayaraman, A., Gebreselassie, T., & Chandrasekhar, S. (2009). Effect of conflict on age at marriage and age at first birth in Rwanda. *Population Research and Policy Review*, 28(5), 551–567. <https://doi.org/10.1007/s11113-008-9116-3>
- John, B. M., & Nitsche, N. (2025). Prevalence and drivers of stalls and reversals in age at first marriage in sub-Saharan Africa. *Population Research and Policy Review*, 44(3), Article 26. <https://doi.org/10.1007/s11113-024-09932-0>
- Juárez, F., & Gayet, C. (2014). Transitions to adulthood in developing countries. *Annual Review of Sociology*, 40, 521–538. <https://doi.org/10.1146/annurev-soc-052914-085540>
- Kelly, J., Albutt, K., Kabanga, J., Anderson, K., & VanRooyen, M. (2017). Rejection, acceptance and the spectrum between: Understanding male attitudes and experiences towards conflict-related sexual violence in eastern Democratic Republic of Congo. *BMC Women's Health*, 17(1), Article 127. <https://doi.org/10.1186/s12905-017-0479-7>
- Kinyanda, E., Musisi, S., Biryabarema, C., Ezati, I., Oboke, H., Ojiambo-Ochieng, R., Were-Oguttu, J., Levin, J., Grosskurth, H., & Walugembe, J. (2010). War related sexual violence and its medical and psychological consequences as seen in Kitgum, northern Uganda: A cross-sectional study. *BMC International Health and Human Rights*, 10(1), Article 28. <https://doi.org/10.1186/1472-698X-10-28>
- Kohli, A., Tosha, M., Ramazani, P., Safari, O., Bachunguye, R., Zahiga, I., Iragi, A., & Glass, N. (2013). Family and community rejection and a Congolese led mediation intervention to reintegrate rejected survivors of sexual violence in eastern Democratic Republic of Congo. *Health Care for Women International*, 34(9), 736–756.

<https://doi.org/10.1080/07399332.2012.721418>

Koning, S. M. (2024). Protracted chains of violence: How chronic conflict and displacement structure intimate partner violence at the Thailand–Myanmar border. *Population Research and Policy Review*, 43(2), Article 11. <https://doi.org/10.1007/s11113-023-09855-2>

Korinek, K., Sawangdee, Y., Jirapramukpitak, T., & Jampaklay, A. (2025). Migration amidst conflict and cumulative causation: An analysis of international and domestic migration in Thailand's southernmost provinces. *Population Research and Policy Review*, 44(1), Article 17. <https://doi.org/10.1007/s11113-025-09937-3>

Korinek, K., Williams, N., Koning, S., & Young, Y. (2026). Introduction: Demography and war—Research on population and health in contexts of armed conflict. *Population Research and Policy Review*, 45(1), Article 9. <https://doi.org/10.1007/s11113-025-09981-z>

Krafft, C., Arango, D. J., Rubin, A. H., & Kelly, J. (2024). Conflict and girl child marriage: Global evidence. *Population Research and Policy Review*, 43(4), Article 60. <https://doi.org/10.1007/s11113-024-09905-3>

Kramer, S. (2012). Forced marriage and the absence of gang rape: Explaining sexual violence by the Lord's Resistance Army in northern Uganda. *Columbia Journal of Gender and Law*, 23(1), 11–49. <https://doi.org/10.7916/D8QC01G1>

Kwon, N., & Sohn, H. (2023). The effect of age at first marriage on female fertility: Evidence from Korea's school entry policy using exact date of birth. *Population Research and Policy Review*, 42(1), Article 8. <https://doi.org/10.1007/s11113-023-09747-5>

Larson, J. H., & LaMont, C. (2005). The relationship of childhood sexual abuse to the marital attitudes and readiness for marriage of single young adult women. *Journal of Family Issues*, 26(4), 415–430. <https://doi.org/10.1177/0192513X04270474>

Luetke, M., Svallfors, S., & Boyle, E. H. (2026). Measuring the impact of armed conflict on population health: A guide for researchers. *Population and Development Review*. Advance online publication. <https://doi.org/10.1111/padr.70047>

Mercier, M., Ngenzebuke, R. L., & Verwimp, P. (2020). Violence exposure and poverty: Evidence from the Burundi civil war. *Journal of Comparative Economics*, 48(4), 822–840. <https://doi.org/10.1016/j.jce.2020.04.005>

Merotto, D. (2020). *Uganda: Jobs strategy for inclusive growth*. World Bank. <https://doi.org/10.1596/33342>

Mugisho, G. (2024). War, school dropout and adolescent motherhood in the Democratic Republic of the Congo: Evidence from the 2007 and 2013/2014 Demographic and Health Surveys. *Journal of Population Research*, 41(4), 1–30. <https://doi.org/10.1007/s12546-024-09345-y>

Mugisho, G. (2025a). Effect of conflict and conflict-related sexual violence on first-order marital and premarital adolescent fertility in the Democratic Republic of the Congo. *Canadian Studies in Population*, 52(1), Article 15. <https://doi.org/10.1007/s42650-025-00103-w>

Mugisho, G. (2025b). How conflict shapes the impact of infant and child mortality on fertility in the Democratic Republic of the Congo. *Advances in Life Course Research*, 65, Article 100692. <https://doi.org/10.1016/j.alcr.2025.100692>

Mujuzi, J. D. (2013). The Ugandan Customary Marriage (Registration) Act: A comment. *Journal of Third World Studies*, 30(1), 171–191.

Mulumeoderhwa, M. (2016). “A girl who gets pregnant or spends the night with a man is no longer a girl”: Forced marriage in the eastern Democratic Republic of Congo. *Sexuality & Culture*, 20(4), 1042–1062. <https://doi.org/10.1007/s12119-016-9373-y>

- Mummolo, J., & Peterson, E. (2018). Improving the interpretation of fixed effects regression results. *Political Science Research and Methods*, 6(4), 829–835.
<https://doi.org/10.1017/psrm.2017.44>
- Nachmani, A. (2024). Rape, war, genocide: A strategy to deliberate extermination. In R. Goldstein & N. Nachmias (Eds.), *Human rights interdependence in national and international politics: Checks and balances effect on Global South politics* (pp. 118–146). Routledge.
<https://doi.org/10.4324/9781003319573>
- Nalwadda, G., Mirembe, F., Byamugisha, J., & Faxelid, E. (2010). Persistent high fertility in Uganda: Young people recount obstacles and enabling factors to use of contraceptives. *BMC Public Health*, 10(1), Article 530. <https://doi.org/10.1186/1471-2458-10-530>
- Noguchi, K. (2023). Personal freedom, family compositions and well-being. *International Journal of Psychology*, 58(3), 207–216. <https://doi.org/10.1002/ijop.12897>
- Omba Kalonda, J. C., Kittel, F., & Piette, D. (2013). Stigma of victims of sexual violence in armed conflicts: Another factor in the spread of the HIV epidemic? *Epidemiology: Open Access*, 3(2), 1–3. <https://doi.org/10.4172/2161-1165.1000124>
- Onagoruwa, A., & Wodon, Q. (2018). Measuring the impact of child marriage on total fertility: A study for fifteen countries. *Journal of Biosocial Science*, 50(5), 626–639.
<https://doi.org/10.1017/S0021932017000542>
- Park, M., & Stokowski, P. A. (2009). Social disruption theory and crime in rural communities: Comparisons across three levels of tourism growth. *Tourism Management*, 30(6), 905–915.
<https://doi.org/10.1016/j.tourman.2008.11.015>
- Pettersson, T., & Öberg, M. (2020). Organized violence, 1989–2019. *Journal of Peace Research*, 57(4), 597–613. <https://doi.org/10.1177/0022343320934986>
- Pham, P., & Vinck, P. (2007). *When the war ends: A population-based survey on attitudes about peace, justice, and social reconstruction in northern Uganda* [SSRN scholarly paper]. SSRN.
<https://doi.org/10.2139/ssrn.1448368>
- Pollet, T. V., Fawcett, T. W., Buunk, A. P., & Nettle, D. (2009). Sex-ratio biasing towards daughters among lower-ranking co-wives in Rwanda. *Biology Letters*, 5(6), 765–768.
<https://doi.org/10.1098/rsbl.2009.0394>
- Pullum, T. W. (2006). *An assessment of age and date reporting in the DHS surveys, 1985–2003* (DHS Methodological Reports No. 5). Macro International.
<https://dhsprogram.com/publications/publication-mr5-methodological-reports.cfm>
- Quisumbing, A., & Hallman, K. (2003). *Marriage in transition: Evidence on age, education, and assets from six developing countries* (Policy Research Division Working Paper). Population Council. <https://doi.org/10.31899/pgy6.1090>
- Rodgers, W. L., & Thornton, A. (1985). Changing patterns of first marriage in the United States. *Demography*, 22(2), 265–279. <https://doi.org/10.2307/2061181>
- Rosenzweig, M. R., & Stark, O. (1989). Consumption smoothing, migration, and marriage: Evidence from rural India. *Journal of Political Economy*, 97(4), 905–926.
<https://doi.org/10.1086/261633>
- Rubimbwa, R., Komurembe, G., Ahumuza, E. T., Mukisa, J., Karema, C. A., & Otto, D. L. (2012). *Monitoring implementation of Uganda Action Plan (NAP) for UNSCR 1325, 1820 and the Goma Declaration*. Centre for Women in Governance. https://www.peacewomen.org/assets/file/Resources/NGO/uganda_nap_monitoring_report_2012.pdf
- Rubini, E., Valente, M., Trentin, M., Facci, G., Ragazzoni, L., & Gino, S. (2023). Negative consequences of conflict-related sexual violence on survivors: A systematic review of

- qualitative evidence. *International Journal for Equity in Health*, 22(1), Article 227. <https://doi.org/10.1186/s12939-023-02038-7>
- Sassler, S., & Lichter, D. T. (2020). Cohabitation and marriage: Complexity and diversity in union-formation patterns. *Journal of Marriage and Family*, 82(1), 35–61. <https://doi.org/10.1111/jomf.12617>
- Schoumaker, B. (2001). *Analyses multi-niveaux des déterminants de la fécondité: Théories, méthodes et applications au Maroc rural* [Multilevel analyses of the determinants of fertility: Theories, methods and applications to rural Morocco] [Doctoral dissertation, Université catholique de Louvain]. DIAL. <https://hdl.handle.net/2078.5/63576>
- Schoumaker, B. (2014). *Quality and consistency of DHS fertility estimates, 1990 to 2012* (DHS Methodological Reports No. 12). ICF International.
- Serneels, P., & Verpoorten, M. (2015). The impact of armed conflict on economic performance: Evidence from Rwanda. *Journal of Conflict Resolution*, 59(4), 555–592. <https://doi.org/10.1177/0022002713515409>
- Shemyakina, O. (2013). Patterns in female age at first marriage and Tajik armed conflict. *European Journal of Population*, 29(3), 303–343. <https://doi.org/10.1007/s10680-013-9289-2>
- Sieverding, M., Krafft, C., Berri, N., & Keo, C. (2020). Persistence and change in marriage practices among Syrian refugees in Jordan. *Studies in Family Planning*, 51(3), 225–249. <https://doi.org/10.1111/sifp.12134>
- Solon, G., Haider, S. J., & Wooldridge, J. M. (2015). What Are We Weighting For? *Journal of Human Resources*, 50(2), 301–316. <https://doi.org/10.3368/jhr.50.2.301>
- Ssenyonjo, M. (2005). Accountability of non-state actors in Uganda for war crimes and human rights violations: Between amnesty and the International Criminal Court. *Journal of Conflict and Security Law*, 10(3), 405–434. <https://doi.org/10.1093/jcsl/kri022>
- Staveteig, S. E. (2011). *Genocide, nuptiality, and fertility in Rwanda and Bosnia-Herzegovina* [Doctoral dissertation, University of California, Berkeley]. eScholarship. <https://escholarship.org/uc/item/0t58z112>
- Stewart, F., & FitzGerald, V. (2000). Introduction: Assessing the economic costs of war. In F. Stewart & V. FitzGerald (Eds.), *War and underdevelopment: Vol. 1. The economic and social consequences of conflict* (pp. 1–20). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199241866.003.0001>
- Stites, E., Krystalli, R., Humphrey, A., & Gathuoy, N. M. (2022). Cattle to cash: Changing marriage practices among displaced people in Bentiu, South Sudan. *Women's Studies International Forum*, 94, Article 102632. <https://doi.org/10.1016/j.wsif.2022.102632>
- Sundberg, R., & Melander, E. (2013). Introducing the UCDP Georeferenced Event Dataset. *Journal of Peace Research*, 50(4), 523–532. <https://doi.org/10.1177/0022343313484347>
- Svallfors, S. (2020). *Hidden casualties: The links between armed conflict and intimate partner violence in Colombia* [Preprint]. Stockholm University. <https://doi.org/10.17045/sthlmuni.13102997.v1>
- Thiede, B. C., Hancock, M., Kodouda, A., & Piazza, J. (2020). Exposure to armed conflict and fertility in sub-Saharan Africa. *Demography*, 57(6), 2113–2141. <https://doi.org/10.1007/s13524-020-00923-2>
- Timoneda, J. C. (2021). Estimating group fixed effects in panel data with a binary dependent variable: How the LPM outperforms logistic regression in rare events data. *Social Science Research*, 93, Article 102486. <https://doi.org/10.1016/j.ssresearch.2020.102486>
- Torrissi, O. (2020). Armed conflict and the timing of childbearing in Azerbaijan. *Population and*

- Development Review*, 46(3), 501–556. <https://doi.org/10.1111/padr.12359>
- Torrisi, O. (2022). Wedding amidst war? Armed conflict and female teen marriage in Azerbaijan. *European Journal of Population*, 38(5), 1243–1275. <https://doi.org/10.1007/s10680-022-09645-0>
- Turshen, M., & Twagiramariya, C. (Eds.). (1998). *What women do in wartime: Gender and conflict in Africa*. Zed Books.
- Uganda Bureau of Statistics & ICF. (2018). *Uganda Demographic and Health Survey 2016*. UBOS; ICF. <https://dhsprogram.com/publications/publication-fr333-dhs-final-reports.cfm>
- Uganda Bureau of Statistics & ICF International. (2012). *Uganda Demographic and Health Survey 2011*. UBOS; ICF International. <https://dhsprogram.com/publications/publication-fr264-dhs-final-reports.cfm>
- Valente, C. (2011). *What did the Maoists ever do for us? Education and marriage of women exposed to civil conflict in Nepal* (HiCN Working Paper No. 105). Households in Conflict Network. <https://ideas.repec.org/p/hic/wpaper/105.html>
- Vikram, K., Lee, H. J., & Visaria, A. (2025). Is delaying marriage beneficial in later life? Age at marriage and psychological and cognitive health in later life in India. *Innovation in Aging*, 9(6), Article igaf056. <https://doi.org/10.1093/geroni/igaf056>
- Watt, D. C., Aitchison, T. C., MacKie, R. M., & Sirel, J. M. (1996). Survival analysis: The importance of censored observations. *Melanoma Research*, 6(5), 379–385. <https://doi.org/10.1097/00008390-199610000-00005>
- Weis, K., & Borges, S. S. (1973). Victimology and rape: The case of the legitimate victim. *Issues in Criminology*, 8(2), 71–115.
- Woldetsadik, M. A., Acan, G., & Odiya, O. I. (2022). The enduring consequences of conflict-related sexual violence: A qualitative study of women survivors in northern Uganda. *Conflict and Health*, 16(1), Article 16. <https://doi.org/10.1186/s13031-022-00448-y>
- Wood, E. J. (2008). The social processes of civil war: The wartime transformation of social networks. *Annual Review of Political Science*, 11(1), 539–561. <https://doi.org/10.1146/annurev.polisci.8.082103.104832>
- Xian, M., & Liu, Z. (2026). The effect of women's education on fertility in China: Evidence from extensive and intensive margins. *Population Research and Policy Review*, 45(2), Article 16. <https://doi.org/10.1007/s11113-026-09998-y>