Measuring Union Formalization for a New Generation of Family Demography: A Case Study from Urban Kenya

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Despite repeated calls for improved measures of marriage as a process in sub-Saharan Africa, large-scale surveys continue to rely on static marital status. As a result, there is an incomplete understanding of the effects of marriage on outcomes of interest. We use qualitative and survey data from a longitudinal study of 1,203 young mothers residing in informal settlements of Nairobi, Kenya, to (1) describe the development of an innovative measure of union formalization (UF) defined as the steps through which a union attains social legitimacy; (2) compare UF with a conventional current marital status measure; (3) examine the distribution of UF steps across union history; and (4) examine the sequence and timing of pregnancy and childbearing within the UF process. We find UF steps indicative of both increasing individualization of marriage and the ongoing importance of kin involvement hold meaning. We demonstrate extensive heterogeneity in the sequence and extent of UF steps completed and interrogate the classification of premarital childbearing using sequence analysis. We argue that measuring UF is feasible and necessary for the next generation of family demography in Africa; UF measures facilitate understanding the linkages among family dynamics, health, and social stratification within the context of ongoing socioeconomic change.

Introduction

Over 30 years ago, in an article published in *Population and Development Review*, Dominique Meekers (Meekers 1992) used data from Cote d'Ivoire to demonstrate the value of measuring marriage as a process rather than a discrete event. He found patterned variation in the sequence and timing of

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key steps in the union formation process that varied systematically by ethnic identity, cohort, and educational attainment. This was followed by a similar study in Zimbabwe (Meekers 1994). The work in Cote d'Ivoire suggested that the social approval, and therefore social consequences, of the timing of fertility events would differ across different types of unions; and his work in both settings illustrated both the emerging importance of couple-driven union formation dynamics, alongside the ongoing importance of kin involvement for the formalization of unions. Meekers suggested a process measure of marriage was essential for understanding and assessing fertility dynamics as well as the impacts of economic development and social change on family dynamics in Africa.

However, to date, most large-scale surveys continue to capture only current marital status, commonly categorized as married, living together, divorced, separated, or widowed, and therefore offer a limited, if not erroneous, understanding of the effects of marriage on outcomes of interest (Clark and Brauner-Otto 2015). Indeed, process measures of marriage may be even more important today given the significant social change to marriage and family formation underway across the continent. A well-established body of work has documented a shift from more to less formal marriage (Calvès 2016; Hunter 2016), including an increase in cohabitation (Clark and Brauner-Otto 2015; Shapiro and Gebreselassie 2014) and, in some cases, a retreat from marriage (Hosegood, McGrath, and Moultrie 2009) linked to migration, urbanization, commodification of relationships (Parikh 2016), increased women's labor force participation, and economic precarity. However, none of these shifts necessarily mean the end of marriage itself, but rather reflect shifts in the extent to which, and how, unions are formalized.

The central aim of this paper is to reinvigorate arguments for the importance and feasibility of measuring the process of *union formalization* (UF), which we define as the steps through which a union attains social legitimacy. We begin by making a case for the need to move from a status to a process measure and reviewing recent efforts to do this. We then describe our approach to developing this measure in two low-income urban communities in Nairobi, Kenya, followed by an illustrative application of the measure to an analysis of the sequence and timing of UF vis-a-vis childbearing. The last section offers a discussion of how a UF measure can contribute to a richer understanding of the links between union and family formation and other outcomes of interest. Finally, we offer suggestions for future data collection efforts.

From a measure of status to a focus on social legitimacy

Anthropologists have long recognized, especially in the African context, that marriage is a protracted process comprised of many steps that bestow

legitimacy and respect (Radcliffe-Brown 1950; Evans-Pritchard 1950). By accounting for these steps, we not only capture marriage as a process but can also interrogate which processes, within the context of social change, accord a union social legitimacy.

The continuing importance of kinship and bridewealth

Union formation practices are in flux on the African continent. Since the end of the colonial era, many of the observed changes to marriage have been explained by ideational shifts towards individualization—a hallmark of modernity (Giddens 1991). These include a noted rise in "companionate" or love marriages (Cole and Thomas 2009; Hirsch et al. 2009), with emphasis on the conjugal bond (Smith 2007), and an increase in informal, cohabiting unions (Clark and Brauner-Otto 2015; Shapiro and Gebreselassie 2014; Hunter 2016), particularly in urban settings (Calvès 2016). Despite these changes, kin involvement and recognition continue to carry significance for the social legitimization of marriage. Indeed, "traditional" kin-based marriage processes have not been supplanted by "modern" marriage practices associated with individualization but have been incorporated into them (Meekers 1992; Smith 2004; Smith 2007). This is perhaps best illustrated through the payment of bridewealth. Whereas, the burden of the payment has largely shifted from the groom's kin to the groom himself, in accordance with individualization (Middleton 1960), kin involvement in negotiations and ceremonies continues to impart social legitimacy (Calves and Meekers 1999; Hertrich 2013; Horne, Dodoo, and Dodoo 2013; Sennott, Madhavan, and Nam 2021). Moreover, the absence of payment carries social and economic consequences for women and children including jeopardizing access to land and rights to inheritance, and weakening children's belonging to the man's lineage (Hakansson 1994; Whyte 2005).

While the social value of bridewealth exchange endures, in some settings it is becoming more aspirational and difficult to achieve (Parikh 2016; Mojola 2014) because bridewealth costs have risen to a level out of reach for even middle-class Africans. In South Africa, the rising cost of bridewealth has arguably contributed to an overall decline in formal marriage rates (Hosegood, McGrath, and Moultrie 2009). Elsewhere, higher costs have delayed the formalization of unions (Smith 2020), and may explain the shift from more- to less-formal unions, particularly in urban settings (Antoine, Razafindrakoto, and Roubaud 2001; Calvès 2016) and recently documented in rural ones as well (Chae, Agadjanian, and Hayford 2021; Pike 2021). At the same time, these challenges are opening up space to elevate steps such as an "introduction ceremony" between kin as a means to strengthen social legitimacy (Hunter 2016). In fact, the continued centrality of kin recognition for the social legitimacy of marriage may, in part, reflect the ongoing importance of kinship as a source of economic and social support to the couple,

and the children that result from unions, in contexts marked by economic precarity (Madhavan et al. 2017; Madhavan, Clark, and Hara 2018). It is the potential importance of these links between union and family formation for support of children that we turn to next.

Linking union formalization, childbearing, and outcomes

Process measures of marriage can make valuable contributions to our estimation of the linkages between union and family formation. Among the clearest examples of this may be the classification of premarital fertility. Premarital fertility has long been a preoccupation for demographers because it is associated with lower maternal educational attainment (Eloundou-Enyegue 2004), less formal or stable subsequent relationships for young mothers (Calvès 1999; Hattori and Dodoo 2007; Sennott et al. 2016), and poorer child health and survival rates (Clark and Hamplová 2013; DeRose et al. 2017). A key factor in explaining these outcomes is the extent of support afforded to mothers from both the child's father (Madhavan, Harrison, and Sennott 2013) and other kin (Clark, Koski, and Smith-Greenaway 2017; Madhavan, Clark, and Hara 2018). While there is little doubt that having a child in the absence of support has a cascade of negative consequences, defining "premarital" is anything but straightforward (Clark, Koski, and Smith-Greenaway 2017; Sennott et al. 2016; Smith-Greenaway and Clark 2018), in large part because studies have consistently done a poor job of capturing marriage as a process. Meekers' own work in Cote d'Ivoire suggested that the social approval, and therefore, consequences, of the timing of fertility would differ by stage of the marriage process (1992). Measures that can better estimate the social legitimacy of a union at the time of conception and birth would be of immense value for more precisely identifying for whom and under what conditions there are negative consequences, and how these change over time.

UF at the time of childbearing may explain variation in health outcomes through differential investments in children. Evidence suggests that women who have children prior to more formal marriage remain single longer than young nulliparous, never-married women (Calvès 1999; Hattori and Dodoo 2007; Sennott et al. 2016; Smith-Greenaway and Clark 2018) and may go on to have less formal unions (Sennott et al. 2016) that appear less stable (Poulin, Beegle, and Xu 2021). We also know that these mothers draw less support from the father of the child (Madhavan, Harrison, and Sennott 2013) and/or his kin (Clark et al. 2017; Madhavan, Clark, and Hara 2018; Houle et al. 2013; Madhavan, Richter, and Norris 2016; Madhavan et al. 2014). This, in turn, has negative implications for child health (Finlay et al. 2016; Madhavan and Townsend 2007). Evidence also suggests that children born to mothers who are not married, or experience union dissolution, have a higher risk of mortality (Clark and

Hamplová 2013; DeRose et al. 2017). On the other hand, when fathers provide support, it has a clear beneficial effect for children's health (Clark, Madhavan, and Kabiru 2018).

In linking kinship support to UF and child outcomes, we see the transfer of social capital to children as being fundamentally conditioned by institutions such as marriage and kinship. While the bulk of investments come from mothers, who remain the primary caregivers in the African context, extended kin and, increasingly, fathers play important roles (Rabie, Skeen, and Tomlinson 2020). However, the investment by the father's kin is likely to be a function of their involvement in formalizing unions that produced the child (in the case of biological fathers) or raised the child (in the case of nonbiological fathers). Therefore, a mother's access to resources critical to her children's well-being is a function of her own attributes, her relationship to the biological or nonbiological father of the child, and her connection to her children's maternal and paternal kin. This is particularly critical in low-income urban informal settlements where a rapidly increasing share of the African population resides (DESA 2021) and where few state-funded social safety nets exist.

Recent innovations in measuring marriage

It goes without saying that capturing the complexities of UF is a daunting task. Nonetheless, several notable efforts have been made to improve the measurement of marriage in both small and large-scale data collection efforts. For starters, the Demographic and Health Surveys (DHS), the most utilized source of data for scholars working in Africa, have long differentiated cohabitation ("living together as if married") from "married" in their categorization of marital status. This has facilitated analyses showing both variations in the prevalence of cohabitation across contexts as well as a significant increase in rates of cohabitation over time (Shapiro and Gebreselassie 2014; Odimegwu et al. 2018). More recently, DHS has expanded the measure of marriage to include a question on whether a marriage certificate was attained and also records the timing of the start of cohabitation for both the first and current union in the case of multiple unions. This will facilitate more sophisticated analysis of UF, dissolution, and re-partnering.

Smaller studies in West and Central Africa have used retrospective life course surveys to capture the evolution of unions. For example, a study in Libreville, Gabon, captured the timing of multiple UF steps including entry into a relationship, introductions, cohabitation, and ceremonies, and identified an emerging form of union called "keeping company," or a noncohabiting consensual union (Antoine et al. 2009). In Burkina Faso, Calvès (2016) used a retrospective calendar to examine any UF steps among women and men in the transition to first birth including cohabitation, and whether they

advanced into customary, religious, or civil marriage and found a rise in cohabitation irrespective of socioeconomic status.

Studies from Southern and East Africa have incorporated measures of social legitimacy to offer additional insights into the changing role of kin and bridewealth in union formation. Bertrand-Dansereau and Clark (2016) examined the predictors of early union dissolution among ever-married women below the age of 50 using union histories collected as part of the Malawi Longitudinal Study of Families and Health. These data captured whether there was involvement of an *ankhoswe* (senior kin member who negotiates UF steps) and the promise and payment of bridewealth. They found that individual characteristics mattered less than relationship dynamics and kin involvement for the stability of unions. Finally, using three waves of data in Mozambique, Chae, Agadjanian, and Hayford (2021) captured the effects of partial or complete bridewealth payment among women in a union at wave one on later outcomes. Their findings suggested bridewealth payment was less likely among younger generations, had little bearing on women's autonomy, but remained important for union stability. Finally, the Urban Integration Survey (UIS), a small-scale study in Nairobi, Kenya, the site of our own project, included multiple categories of marriage type and found a decline in formal marriage practices (i.e., customary, religious, or civil ceremony) over time, and a corresponding rise in informal cohabitation, commonly referred to as "come-we-stay" unions (Bocquier and Khasakhala 2009). The difficulty of accurately capturing "marriage" is made clear when comparing the results from the UIS with the DHS. Whereas the UIS found that 72 percent of unions were informal in 2001, the corresponding DHS estimate in 2003 was only 8 percent.

By approaching marriage as a process, the above studies offer important insights into how unions and families are changing across Africa. Our own contribution builds on this work and can be distinguished in at least three important ways. First, we approach social legitimacy as a multidimensional concept derived inductively through primary qualitative data collection. Rather than emphasize one marker, for example, certificate, bridewealth, or introduction, we consider all of them as meaningful both in practice and as aspirational goals. This is important because it lends more credibility to defining a socially legitimate and/or formal union. As an example, Bocquier and Khasakhala (2009) found that only 1.4 percent of unions transitioned from informal "come-we-stay" to formal marriage annually and, therefore, concluded that a "come-we-stay" union is not a transitory step, but rather an end in itself. They defined formal marriage as having had a wedding ceremony (religious, customary, or civil). We contend that the focus on one marker does not provide sufficient basis for this conclusion either empirically or substantively. Additionally, a multidimensional approach enables an arguably more valid assessment of outcomes across actual versus idealized trajectories of UF. This then leads to the second feature

notably absent in previous efforts. We explicitly connect the legitimacy of the union with that of the children that result. This is critical as it recognizes the intersection of UF and childbearing as marked by "vital conjunctures" (Johnson-Hanks 2006) in the sense that the timing of UF steps and childbearing together present a number of potential "horizons" that can have both positive and negative implications for the union itself, the well-being of mothers, children, and fathers, as well as the intergenerational transmission of inequality. Finally, we capture change to UF prospectively during our period of observation, rather than relying exclusively on union history data. While UF is a protracted process, there are steps that build legitimacy that can be recorded in shorter time frames. Overall, our approach responds to the question, "Is it enough to talk of marriage as a process?" recently posed by Mark Hunter in his work from South Africa (2016), highlighting the importance of understanding changes to what constitutes social legitimacy for unions. How we do this is the focus of the remainder of the paper.

The Kenyan context

Our research is set in Kenya's capital, Nairobi, one of Africa's largest cities and characterized by increasing economic inequality and cultural diversity. The research site includes two urban informal settlement communities in Nairobi—*Korogocho* and *Viwandani*—covered by the Nairobi Urban Health and Demographic Surveillance System (NUHDSS) administered by the African Population Health and Research Center. These two informal settlements have a combined population of about 90,000 (Wamukoya et al. 2020) and are characterized by inadequate sanitation, limited health care facilities, low-quality housing, high levels of crime, unemployment, and poverty (Emina et al. 2011). Infant and child health indices are very poor (Kimani-Murage et al. 2014). Both sites are multiethnic and include Kikuyu (30 percent), Kamba (24 percent), Luhya (18 percent), and Luo (12 percent) ethnic groups, among others. While the two settlements share many commonalities, Viwandani has higher formal-sector employment opportunities and a more mobile population than Korogocho.

Informal or "come-we-stay" unions, as described earlier, are very common in both communities (Pike, Mojola, and Kabiru 2018). Because of high unemployment, the payment of bridewealth is extremely difficult (Hetherington 2001; Hunter 2016), and wedding ceremonies are likewise rare (Bocquier and Khasakhala 2009). Overall, in these communities early premarital childbearing is not socially acceptable and is stigmatized (Mumah et al. 2020) in line with discourse at the national level that frames premarital childbearing as deviant behavior associated with problems such as the termination of schooling (Onono et al. 2020) and being "chased from home" (Wainaina et al. 2021). Nonetheless, premarital childbearing is a common phenomenon in informal settlements in Nairobi (Beguy, Mumah,

and Gottschalk 2014) in line with national trends. Using conventional marital status and timing measures, Clark, Koski, and Smith-Greenaway (2017) found the probability of premarital birth by age 25 in Kenya was about 0.25, the highest among countries in the East African region, and among the highest observed overall across the continent. At the same time, however, they found that Kenya had experienced the sharpest decline in the likelihood of premarital fertility over three decades of successive birth cohorts.

Data and methods

The process measure of UF was informed by formative qualitative research followed by rigorous field testing through cognitive interviews. The resulting tool was then integrated into the JAMO (*Jamaa na Afya ya Mtoto*) project, an ongoing longitudinal mixed-methods study of the relationships among kinship support, UF, and infant/child development outcomes in Korogocho and Viwandani.

Formative qualitative research

We administered focus groups ($n = 4$) and in-depth interviews with women ($n = 12$), and men ($n = 6$) residing in one of the study sites (see online Appendix A for study design details). These interviews and focus groups identified how marriage takes place in the community, the steps involved in formalizing different types of unions, which steps accord social legitimacy, and reasons for union stability or dissolution. Interview data were audio-recorded, transcribed and translated, and brought into Atlas.ti (version 9) for coding and data reduction. Three researchers conducted the coding work using thematic analysis approaches (Braun and Clarke 2006) to identify salient UF steps across ethnicity and gender that formed the basis for a survey module. Once we developed draft survey questions, we conducted two rounds of 10 cognitive interviews with mothers in the study setting. These interviews facilitated improvements in the wording of some of our key questions, supported our understanding of whether and which processes held social significance, and provided evidence for the feasibility of questions eliciting the timing of key formalization processes.

The JAMO project

Wave 1 started in February 2021 with a sample of 1,235 mothers aged 18–29 with at least one child aged 0–24 months. The study follows these focal children and their mothers over time. We focus on young women to minimize exposure time to changes before entering the study and to maximize exposure to changes in UF over the life of the study. Moreover, the median age at first birth in Nairobi is 22 (Kenya National Bureau of Statistics, Ministry of Health (Kenya) and ICF International 2015). The survey component is

being administered in six waves with six-month intervals, and the qualitative interviews administered in three rounds over three years. In addition to the UF module, the survey includes questions on kinship support to mother and child, couple relationship quality, child health and early childhood development, as well as sociodemographic characteristics of the mother and biological father, socioeconomic status of the household, mother's fertility history, and maternal mental health. Kinship support is assessed using the Kinship Support Tree tool (Madhavan et al. 2017). We will be drawing from a sample of 1,203 mothers who completed all modules of the survey in Wave 1.

Our descriptive analysis of the survey data includes three components. First, we compare the UF measure with the conventional DHS current marital status measure and show the distribution of clusters of UF steps achieved for each reported marital status. To do so, we focus on mothers who reported they were in a current relationship with the biological father of the focal child (FC) at the time of the survey and were therefore reporting UF steps achieved within a current union ($N = 950$). Second, using the entire analytic sample ($n = 1{,}203$), we examine the distribution of UF clusters stratified by relationship status with the biological father to distinguish union from family formation history, recognizing there may be effects on UF from any prior relationships that produced children within a (different) current relationship. Third, we conduct descriptive sequence analysis (Billari 2001) to illustrate the timing of childbearing within the UF process for a subsample of 490 women whose FC is their first child in order to focus on UF as women transition into motherhood. Among these mothers, we used the reported month and year for each of the following events to generate sequence and duration of the following states: living together, introduction to his kin, introduction to her kin, bridewealth payment, wedding ceremony, and procurement of marriage certificate. We also include a "no union" state in the analysis to illustrate time spent outside of a union vis-a-vis childbearing.

Findings

Salient union formalization processes in the informal settlements of Nairobi

We present the findings from our formative work in three sections: the start of most unions, the role of kin, and the importance of bridewealth. While our study site, like many other informal settlements in Nairobi, is characterized by significant ethnic diversity, ethnic distinctions in how marriage is actually practiced were minimal. This is consistent with earlier analysis in the study site (Bocquier and Khasakhala 2009) as well as nationally. For example, Garenne and Zwang (2006) found few differences across ethnicity in premarital fertility trends in Kenya that could not be explained

by socioeconomic factors. More salient in this setting were distinctions in the gendered evaluation of unions, also noted by Pike, Mojola, and Kabiru (2018). We highlight, where appropriate, gender differences in discussions on whether and why certain UF steps are valued.

The start of a union. Consistent with other work, we found come-we-stay unions to be perceived as ubiquitous. Nearly every one of our participants, women, and men, had been involved in a come-we-stay arrangement at some point in his/her life. Participants described come-we-stay as both the most common starting point from which unions may or may not become more formalized as well as the most common type of "marriage" in their communities. However, the social acceptance for come-we-stay unions was evaluated differently across gender. A 26-year-old woman explained the central features of a come-we-stay union as follows:

> You live with someone, he doesn't know your parents, you also don't know his parents, you don't know his home, he also doesn't know my home…that is come-we-stay.

In other words, what distinguishes come-we-stay from relationships described more readily as "marriage," is the absence of kin involvement or approval. These unions have the advantage of having fewer kin obligations, easier exit, and, therefore, more freedom. However, particularly among women, being in a come-we-stay union was often not a choice, but rather, the result of having little choice within the context of gendered social and economic constraints, often exacerbated by pregnancy. These unions were also described as unstable, as a 27-year-old woman recounts in her summary of the lifecycle of a come-we-stay union in Korogocho:

> … this come-we-stay, you just meet with the boy, when you meet with the boy, you [fall in love]…After a while you are pregnant, your mother quarrels [with] you, you run there. After running there, you live there. You don't even finish a year, violence in the house occurs, then that husband feels that you don't deserve him, so he starts with someone else, so you see, that is what is called come-we-stay

Other women described similar experiences, particularly for their first marriages, where a pregnancy instigates cohabitation that is soon followed by marital discord, often made worse by economic hardship, and ends in the union dissolving.

Men evaluated come-we-stay marriages more positively, precisely because there is no financial commitment to the woman. One man in a focus group explained his opinion of come-we-stay as

> …good because even if we separate, I will not lose anything, like maybe we wedded and [I] paid dowry. So, if you bring problems my way, you can go back to your home because you just came and there is no place we were stuck together that we cannot separate.

In contexts marked by significant economic uncertainty, high unemployment, and a shared belief that a married man should be able to fulfill "male provider role" expectations (Wyrod 2016), proceeding with further formalizing a union is not without risk for men. Accumulating the money for bridewealth is difficult, and the need to do so multiple times is simply not possible. At the same time, however, a man who cannot move ahead with formalizing a union risks losing a partner he would rather not lose. For example, a 31-year-old man who had never held a stable job, described having had three come-we-stay unions, despite wishing to have remained with his first wife and formalizing the union further. He recounted with remorse that he believed this relationship ended because he "was never financially stable."

Both men and women recognized that come-we-stay unions are not seen as socially legitimate in the eyes of the community. However, these unions can, and often do, transition into more formalized unions as explained by a 31-year-old woman:

> Some can last, like if you don't feel that it's poverty that brought you to him. You just take him like someone who you love…. So it can be serious… things can happen. That dowry can be paid, a wedding can be done. … It will still take time because you are still getting to know each other first, to know if she is really a good wife or a good husband.

Therefore, while participants explained that many come-we-stay unions dissolve before formalization steps occur, they also insisted that what begins as come-we-stay can earn the respect of the family and the community if the couple respects one another, and additional formalization steps are taken. It is whether, how, and to what extent this takes place that may be important for union stability, women's well-being and the health, and well-being of any resulting children.

The importance of "being known". Among the most important formalization steps, and the most commonly practiced, are formal introductions to kin. Both the introduction of the woman to her partner's family, as well as the introduction of the man and/or his kin to the woman's family, were described as significant and memorable events. The effort made to ensure that kin from one side is known to the other was of great importance, particularly for women, and was described as a necessary step for having a "respectable" marriage, to which most women and men aspired. Participants colorfully contrasted respectable marriages that took place "in the light" from those that took place "in darkness." Marriages "in the light" were conducted with the knowledge and approval of kin. For women, introductions were an important step toward establishing economic security, particularly for their children, as described by this 38-year-old woman:

> It means that his parents know me, and it would help because in case of anything I can go and tell them to support my children if I am in need.

Introducing a woman to the man's kin signals commitment and belonging and ensures that the woman is known. In turn, the man (or his kin) being introduced to the woman's family is even more significant, as it often also represents an invitation to begin bridewealth negotiations. For women, this also accords respect to her family, as this 37-year-old woman explained:

> It's very important because the man has gone to the wife's home and that makes the parents of the woman very proud, and they know even the dowry being brought to them will be easy. If the man has not gone there, they see the relationship as if its friendship only, and not marriage. If something was to happen … the man would be told that he is not recognized because he has never come, even for introduction.

For men, taking this next step is an enviable demonstration of masculine achievement because it also represents important steps toward claiming children for their lineage. As one 33-year-old man recounted of his marriage 10 years prior:

> …when she got pregnant, I sent my father to … the parents of that girl, my wife now. I told him to go and tell them that I have impregnated their daughter and I will marry her because I will not let my child go somewhere else. … We did not get married at night, but the parents knew everything …

This participant emphasized a few times that these UF steps took place "in the light," meaning, with knowledge of kin. Many participants described only ever completing introductions and no other formalization steps, or long gaps (of nearly a decade, or more) before any additional UF steps were taken. This is similar to what Hunter (2016) describes in townships in South Africa as "legitimate cohabitation."

The enduring significance of bridewealth. Within this setting and across all ethnic groups, the receipt of (some) bridewealth payment (which participants termed "dowry"[1]) constitutes a respectable marriage that has achieved complete social legitimacy. While participants described bridewealth payment as rare within informal settlements in Nairobi, this step was still understood as highly significant. For a women, this bestows respect as it demonstrates respect to her parents, and therefore to her and also signals formal belonging to his kin or clan. A 34-year-old woman recounted what bridewealth meant to her:

> To me if dowry is given by your husband, you are now his wife completely and you are known. Even if you separate, the elders can take you back because you belong to your husband's family.

A 30-year-old woman described the importance of her parents receiving some bridewealth as follows:

> I was happy because he went home, you know it's not many who go to your home to take dowry. … these people … feel if you live with someone's child without paying dowry you are not living with them you are just staying with them.

Men also recognized bridewealth payment as important, first to garner respect, and second for cementing the lineage claims to their children, specifically, as evident in the following discussion about the value of bridewealth payment within a focus group discussion among men:

> R6: Listen, …You don't pay dowry because of your wife. Let me just say the truth. …It's because of the children…. You have opened a way for your children.

> R1: … if you have taken [dowry payment] because of the children, and you separate with your wife and she gets married to someone else-

> R6: Listen, the thing that I am always told, "you will have to bring a cow so as to take your baby." And it's not like I will take the baby and my [ex] wife, you see. I will just take the baby. So, the future…you see, when we get married we are looking for a future.

Finally, although very few participants described having a wedding or getting a marriage certificate, they all indicated these were significant and aspirational UF steps. The government of Kenya is actively encouraging couples to get a marriage certificate, which couples are eligible for after six months of cohabitation (Achuka 2017). The interest in getting a marriage certificate was highly gendered, with men largely interpreting the certificate as a financial liability (used as state-sanctioned proof of marriage for dividing assets in case of divorce and/or stipulated monthly child support), and women viewing it as a form of sought-after economic security, particularly in the event of divorce. Among Christian participants (vast majority), the church wedding was widely seen as the final, and most respectable, marriage step, and the "best way" to marry. It was, however, almost unheard of in our study setting, described instead as something that only well-off people did, or as something only seen on TV. (Indeed, there are at least four Kenyan reality TV wedding shows that contribute to the impression that church weddings require immense wealth).

For most participants, the accumulation of steps mattered more than the sequence in which they occurred, with emphasis on kin introductions and bridewealth. That said, variation in sequence patterns may also represent meaningful distinctions in UF practices, indicative of, for example, individualization in marriage partner choice, or cultural differences in marriage practices (Meekers 1992).

TABLE 1 Union formalization module

1.	Do you live together with [current partner]?
	If yes, when did you start living together? What month and year?
2.	Have you been introduced to [current partner's] family? (If yes) month and year?
3.	Has [current partner] been introduced to your family? (If yes) month and year?
4.	Has [current partner's] family started talking to your family about your dowry?
5.	Has any part of the dowry been paid? (If yes: Which year/month was the first part paid?)
6.	Has a wedding ceremony happened? (If yes) Which types? (customary, church, civil, nikah)
	(For each ceremony type completed) What month and year?
7.	Have you gotten a marriage certificate? (If yes) month and year?

NOTE: This module is asked to women who indicate they are currently married, living with someone, or in a romantic relationship, regardless of whether or not the current partner is the biological father of the child. In cases where the relationship with the biological father had ended, similar questions are also asked about their union.

Operationalizing and applying union formalization

Drawing on the formative interviews, we developed the UF module shown in Table 1 for integration into the survey component of the JAMO project.

It is comprised of questions related to seven specific steps: living together, introductions to partner's kin (his and hers), negotiation of bridewealth, first bridewealth payment, wedding ceremony, and marriage certificate. For any UF step experienced, the respondent is then asked the month and year in which it took place, with the exception of the negotiation of bridewealth, as this can be multiple events. We included almost no skip patterns in these questions, allowing for variation in the sequence of these events (e.g., introductions may precede cohabitation; marriage certificates require few prior steps). This limited, yet focused, set of questions captures the salient dimensions of the UF process, and yields responses that are amenable to quantitative analysis.

Table 2 provides selected descriptives of the sample of mothers in the JAMO project. The mean age of the sample is 24. Consistent with Kenya's progress in universal education, 54 percent of the sample has completed secondary school. About a third of the focal children are in the 7–12 months range, 28 percent in 13–18 months, and 27 percent fall in the 19–24 month age group. The vast majority of mothers (66 percent) reported being unemployed. The four main ethnic groups in our sample are Kikuyu, Kamba, Luo, and Luhya. Overall, 79 percent of these mothers of young children reported that they were currently in an intimate relationship at the time of the survey, while the remaining 21 percent were not in any relationship. When using a conventional marital status measure, 73 percent of respondents reported they were currently married or living together with a partner, 11.3

TABLE 2 Sample descriptives, JAMO Wave 1

Mean age	24.2
Education level	
Never been to school	1.0%
Primary school	28.7%
Secondary school	53.6%
Some university or college	4.5%
Completed university or college	5.7%
Focal child age	
0–6 months	9.8%
7–12 months	32.0%
13–18 months	27.6%
19–24 months	26.7%
more than 24 months	4.0%
Employment status	
Formal	13.8%
Informal	20.1%
Unemployed	66.1%
Ethnicity	
Kikuyu	23.6%
Luhya	19.5%
Luo	13.9%
Kamba	21.4%
Somali/Borana	6.4%
Other	15.2%
Union status (using conventional classification)	
Married or living together	73.0%
Divorced/separated	11.3%
Widowed	0.7%
Never married/lived together	15.0%
Union formalization processes with biological father	
Ever lived with bio dad	88.0%
Introduction to his family	78.6%
Introduction to her family	61.3%
Any bridewealth paid	8.8%
Any ceremony (customary, white wedding, civil)*	7.7%

/...

TABLE 2 (Continued)

Marriage certificate	3.3%
Relationship trajectory	
In relationship with bio dad	77.1%
No longer in relationship with bio dad	20.9%
In new relationship	1.9%
N	1203

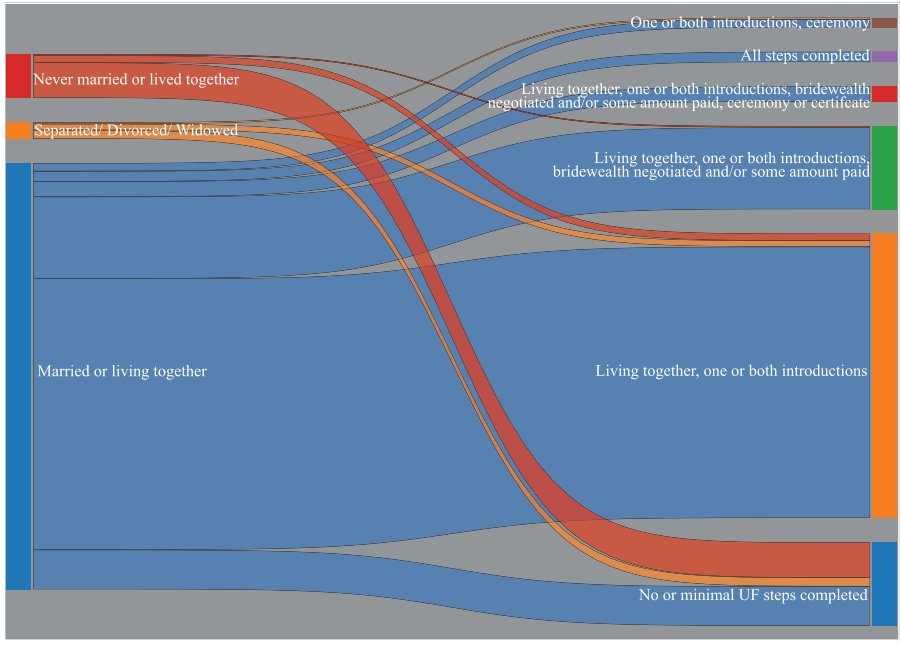
percent were divorced or separated, and 15 percent reported never having been married. When placed in union history perspective, overall, 77 percent ($n = 951$) of these young mothers were with the father of the FC; 21 percent ($n = 259$) were no longer with the father; and a fraction (1.9 percent) had begun a new relationship.

When considering the distribution of UF steps experienced among mothers, the initiation of cohabitation was the most common step taken (88 percent) and introductions were also quite common, with over three-quarters of the sample having been introduced to the biological father's family, and nearly two-thirds reporting the child's father had been introduced to her family. Additional formalization steps were far more rare, with less than 10 percent having had any bridewealth paid, consistent with the qualitative findings. Even fewer had undergone a wedding ceremony; all of which were customary ceremonies (i.e., not church weddings), while just over 3 percent had procured a marriage certificate.

Comparing conventional marital status to a measure of UF. We collected both a conventional marital status measure and the UF measure. To uncover what a conventional marital status measure may be masking, we use a Sankey diagram (Figure 1) comparing the distribution of women's responses to each question, with responses to the conventional marital status measure on the left, and to the UF steps achieved on the right. The categorization of UF steps demonstrates both the common clustering of steps taken (e.g., living together and introductions only) as well as the ordinal nature of the measure. This measure extends from the fewest processes completed (only one or none) at the bottom right, to all processes completed (cohabitation, introductions, negotiation, and some dowry payment, ceremony, and certificate) at the top right.

First, we see notable variation in UF processes among women who reported they were "never married or lived together," 31 percent (13/42) of those categorized as "never married" had actually completed at least two UF steps. More importantly, women who responded that they were "married or living together as if married" ($n = 893$) are distributed across every

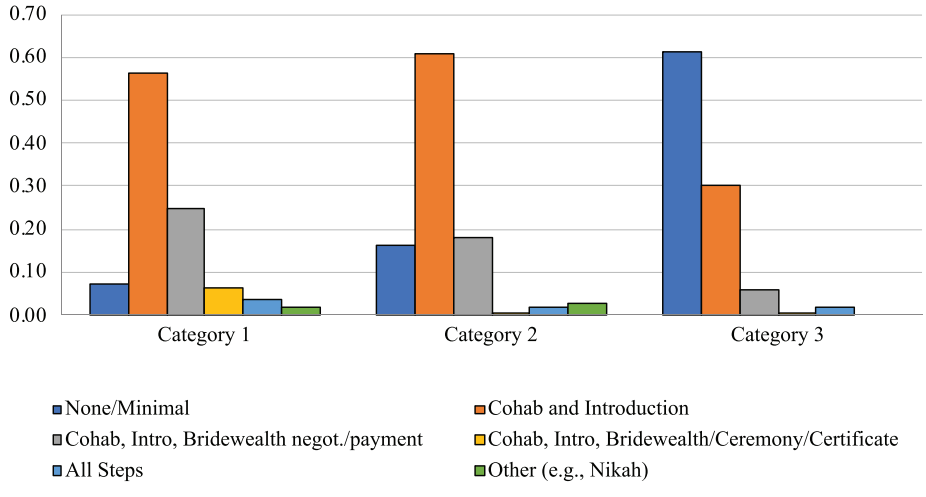
FIGURE 1 Comparing conventional marital status and union formalization measures for mothers in a current relationship with the biological father, JAMO Wave 1 ($N = 950$)



category of UF cluster. This highlights the extent of variation in the level of social legitimacy that is hidden when using a marital status measure and is indicative of the subjectivity of the meaning of "marriage" itself. Further, given the importance of bridewealth for the social legitimacy of a union and its potential importance for securing economic resources to protect children's well-being, differentiating the 576 women (64.5 percent) for whom bridewealth had not yet been negotiated or paid from the remaining 299 women for whom the bridewealth process had started, is meaningful.

Heterogeneity in UF steps by union history. We now turn to variation in the accumulation of UF steps as a function of both union history and birth ordering. Figure 2 shows the distribution of UF steps that had been experienced at the time of the survey differentiated by mother's union and childbearing history and current union status in order to explore any corresponding variation in the extent of UF achieved. From left to right, the first two bar charts (Categories 1 and 2) depict the distribution of current UF for women who were in a relationship with the biological father of the FC at the time of the survey. The unions featured in Category 1 are from women who reported having had one or more children with only the biological father of the FC ($n = 693$). On average, they had 1.8 children and had been with the biological father of the FC for 3.6 years. By contrast, Category 2 depicts

FIGURE 2 Distribution of UF step clusters by union history, JAMO Wave 1 ($n = 1203$)



Category 1: Mothers currently with biological father of all her children
Category 2: Mothers currently with biological father of focal child and children from previous union
Category 3: Mothers no longer in relationship with biological father of focal child

the distribution of UF steps achieved for women who had had a child with a former partner prior to their relationship with the biological father of the FC ($n = 218$). These women had been with the biological father of the FC for, on average, 2.8 years and had an average of 2.6 children. Finally, the third set of bars (Category 3) focuses on the cluster of UF processes that had been achieved for mothers whose relationships with the biological fathers had ended by the time of the survey ($N = 277$).

For both Categories 1 and 2, the most common cluster of UF steps, accounting for more than 50 percent of the sample in each case, was cohabitation and having had one or both introductions. However, the distribution of UF steps differs by union history for the remainder of cases. For women who have only been with the biological father of the FC, over one-third of their unions had gone on to be further formalized, with over 20 percent having started bridewealth negotiations or payment, and close to one-tenth having had a ceremony or all steps completed. By contrast, over one in five unions for women who had a child with a former partner are in relationships characterized by none or only one formalization step having taken place by the time of the survey; and less than 2 percent had had a ceremony, or all steps completed. Some of this variation is likely explained by the difference in the average duration of these unions, but it may also reflect the challenges faced by women and men when navigating a new union involving a child from a former partner. Finally, for mothers whose unions with biological fathers had already dissolved (Category 3), the largest

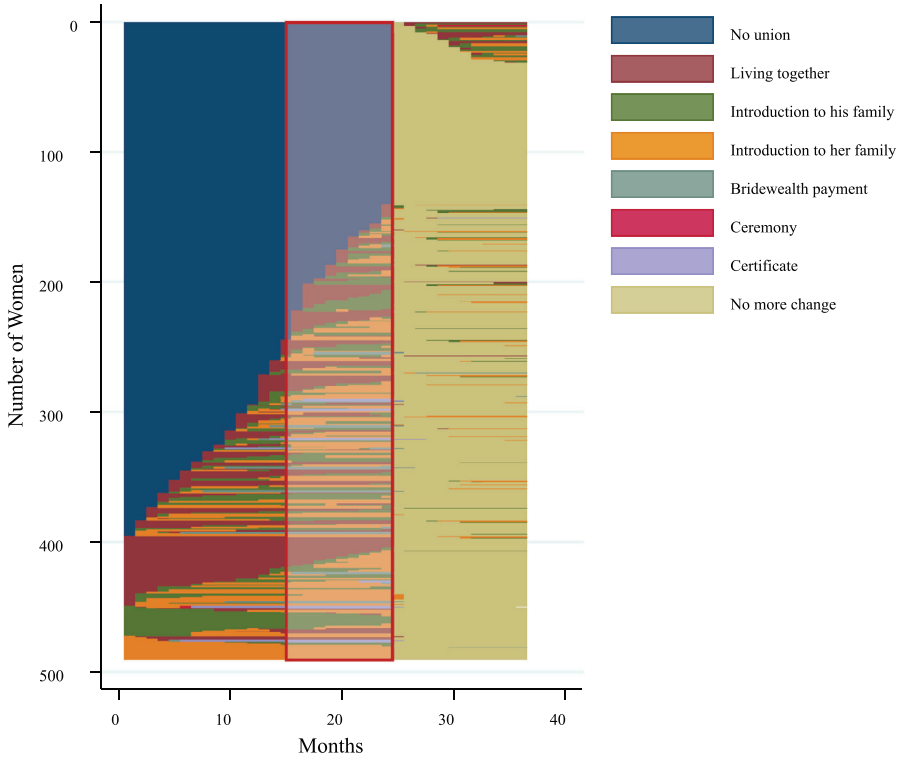
cluster is having no or minimal UF steps (60 percent), followed by having lived together with one or both introductions (31 percent). In other words, there were few, if any, UF steps taken for most women in their unions with the biological fathers that went on to dissolve or were never established. This suggests a link between UF and union stability; but also highlights potential variation in the social significance of introduction ceremonies alone.

Where does childbearing enter the UF process?. Earlier we argued that one key example of the utility of a UF measure is that it allows us to move away from relying on the ambiguous "premarital" classification of childbearing by identifying, with more precision, the conditions into which children are born. We look at this more closely in our data drawn from wave 1 of a subsample of mothers for whom the FC was their first child ($n = 490$). Because our sample is comprised of young mothers with very young children, we expect fewer completed steps than we would in a complete retrospective marital history. Mothers in this group are, on average, 22 years old and the average age of the FC is 13.6 months. At the time of the survey, the majority of these women ($n = 324$) were in a union with the biological father of the FC; for the others, the union had never been established or had dissolved. It is important to note the timing of the start of each state in the diagram is based on the women's self-reported retrospective accounts. Figure 3 presents the results of sequence analysis showing the timing, duration, and stage of UF 24 months prior to first childbirth, and up to 12 months following this birth for a total of 36 months of observation.

By "centering" the analysis on childbirth, we illustrate variation in the sequence, duration, and extent of UF within the context of family formation. To be clear, we align the timing of childbearing at month 24, but this reflects birthdates that range from dates in 2020–2022, among first time mothers who themselves ranged in age at the time of birth from 18 to 30. The *Y* axis represents the number of respondents included, and every row depicts a single woman's UF status over time. The length of a given colored bar reflects the months spent in a given UF state before and after childbirth. The red-outlined, shaded rectangle that begins at month 15 and ends at month 24 denotes the estimated period of time between conception and childbirth. Following childbirth, if there is no change to UF, then the bar is colored beige (see "no more change"). For 216 women, the survey took place less than 12 months after the birth of the FC; therefore, we extend their last reported status to the end of the observation period.

What is most striking from this figure is the extent of heterogeneity in the timing, duration, and sequence of UF steps before the first birth among the young women in this sample. Only 41 women (seen at the top right of the diagram) began to establish unions only following childbirth. Importantly, this analysis is not restricted to relationships with the biological

FIGURE 3 Sequence of union formalization steps, centered on first childbirth for mothers whose focal child is their first child, JAMO Wave 1 (N = 490)



NOTE: Area inside red rectangle denotes duration of first pregnancy, and ends at childbirth.

father, and for women who established unions following childbearing, these may be unions with new partners. An additional 99 women (20 percent) experienced no steps prior to childbirth or following. Together, the births for these 140 women are unequivocally nonmarital or premarital, by standard definitions and measures. The remaining 350 women (71 percent) began to establish unions prior to childbirth, and 95 women (just under 20 percent) had already completed some UF steps before entering the observation period, with any earlier steps left-censored.

With respect to *sequencing*, in the majority of cases where we observe the first UF step, it is living together, although there are exceptions, with a non-trivial minority of unions beginning with introductions to his or her family. The latter pattern could be considered as more in line with "traditional" expectations of kin involvement in UF, and the distinctions between unions that begin with cohabitation as compared to introductions may prove to have an important bearing on later levels of UF or kin support to the relationship or resulting children. With respect to accumulation

of steps, among the 71 percent of women who had entered a union by the time of childbearing, most had entered cohabitation and had experienced at least one or both introductions before birth. With respect to *duration* of each UF state, there is significant variation. That said, often an introduction step follows within a few months after the start of cohabitation. Notably, for women who enter a union prior to childbirth, the accumulation of UF steps occurs most often prior to childbearing, with fewer changes taking place after childbirth. This suggests that childbirth does not catalyze UF. To ensure that the relative lack of change in UF following childbirth is not an artifact of the data alone (given 216 women were interviewed before the FC was 12 months old), we ran a sensitivity analysis and excluded mothers with children less than 12 months of age (not shown). We found the same pattern in our results, thereby bolstering confidence.

Finally, for 103 women (21 percent), pregnancy may have motivated the start of UF, as any UF began only after they became pregnant (denoted by unions that begin within the red rectangle). While these cases would not necessarily be coded as premarital fertility, the conditions around UF for these relationships may differ in meaningful ways. For one, there are far fewer examples of bridewealth payment, ceremony, or certificate occurring for these unions as compared to those that began prior to pregnancy. In large part, this may be explained simply by the shorter duration of the relationship. However, as is the case for the full sample, among mothers who began UF only after pregnancy, only a few report bridewealth payment or other more formalized steps taking place after childbirth. At the end of the observation window, these unions appear, on the whole, more likely to remain less formalized. That said, the sequence of UF steps is not discernably different from that reported by women who entered unions prior to pregnancy.

As seen in a number of contexts, a significant percentage of "premarital births" are actually cases that represent premarital pregnancy followed by marital childbirth (Clark, Koski, and Smith-Greenaway 2017). Our qualitative data underline the challenges that can be faced by women and men in these cases. Some describe the woman being chased from her natal home and coming to live with the man as a result. Other women and men describe pregnancy as a means by which to establish a union, with women gambling on men's desire for children, and men on a woman's compromised social position once pregnant. This gamble is displayed on this diagram. Among the 243 women who had not established a union prior to pregnancy, for some the pregnancy appears to catalyze a succession of many steps experienced in a compressed time frame prior to childbirth, but for 41 percent of these women it results in no progress at all.

Discussion

In this paper, we have described and applied an innovative measure of UF. Building on findings from previous attempts to improve the measurement

of marriage in the African context, we approached the development of a UF measure guided by the tension between increasing individualization and the enduring importance of kin involvement in social life. By privileging the *process*, we draw attention to the inadequacy of status measures. By identifying and including multiple socially significant steps, we can capture whether and which steps, alone or in combination, accord varying levels of *social legitimacy*. Our formative research confirmed that most unions in our study site begin as informal cohabitation but also brought to light the steps needed and valued to formalize these unions. Nearly all of the steps identified as valued by participants—introductions, discussion and payment of bridewealth, and wedding ceremonies—involve kin recognition. Interestingly, the one step that does not involve kin—the certificate—is thus far not recognized as a culturally important marker of social legitimacy.

From our application of the UF measure in the JAMO survey, we uncovered a number of important findings. First, we showed the extent to which variation in the social legitimacy of unions is masked by a standard marital-status measure (Figure 1). Second, we found that while most women in a relationship with their child's father have experienced some form of introduction, fewer have moved to the negotiation or payment of bridewealth, and less than 1 in 10 women reported having had a ceremony or procured a certificate. Nonetheless, our finding that the majority of women in a current relationship with the biological father of the FC had experienced at least one type of introduction (Figure 2) challenges both prior work that concluded informal cohabitation in Nairobi was a type of union, not a step in UF (Bocquier and Khakasala 2009) and complicates our own qualitative findings, where participants described the ubiquity of come-we-stay unions. The latter disjuncture may be reflective of social change to marriage, or the moral anxiety attached to it (Kaler 2001). More specifically, in round one of the JAMO qualitative substudy, some women expressed ambivalence around categorizing their unions. In other words, while there may be broad community understanding of the meaning of "come-we-stay," and the value of introductions, some women expressed uncertainty as to which UF steps differentiated "come-we-stay" from "marriage" in their own relationships.

Lastly, we used sequence analysis (Figure 3) to illustrate how the UF measure offers a way to move beyond the vague and, often times, unhelpful categorization of "premarital fertility" by identifying, with far greater precision, the context into which children are conceived and born. Premarital fertility calculated from large-scale surveys relies on the timing of the start of cohabitation vis-a-vis childbearing. Using this approach, the majority of the women included in Figure 3 would not be coded as having had a premarital birth. However, our findings show that among these women pregnancy and birth occur under very different conditions of social legitimacy, involvement of kin, and perhaps, therefore, support for mother and

child. For example, falling pregnant before any introduction steps have been taken is arguably more precarious than managing a pregnancy after introductions have been made and perhaps even more so compared to those who have exchanged bridewealth. If the reasons for focusing on premarital fertility revolve around the lack of support to women and children for children born in circumstances deemed socially unacceptable, the UF measure demonstrates how a conventional measure of union status would return erroneous estimates of which mothers and children may be less likely to receive support. More generally, by capturing UF together with data on relationship trajectories (e.g., entries and exits into and out of different relationships), we will be able to better identify conditions and circumstances that place women and their children at the highest risk of being socially and economically isolated.

Union formalization, kinship, health, and family change

Beyond an improved understanding of the links between union and family formation, there is value in capturing UF for assessing family dynamics, health outcomes, and other vulnerabilities within the context of economic and social change. First, we expect kinship support to vary by UF. In wave one analyses (not shown) examining the level of reported kinship support from the child's paternal kin across clusters of UF, we did not find a positive relationship between UF and kinship support from the child's paternal kin. This may be due to selection, or the possibility that UF may have a lagged effect on kinship support, or vice versa. It could also reflect other complex shifts in family dynamics. For example, Jackson (2015) argues that kinship has become "matrifocal" in urban Africa and women and men increasingly turn to female kin for support. However, it also may be that mothers are less aware of the sources of monetary support from their affinal ties or that their partners source funds from multiple kin without the respondent's awareness. Finally, it may reflect shifts corresponding to ideals associated with modernity and marriage, namely, expectations of greater support from fewer sources (e.g., the nuclear family) in more formalized marriage. Ironically, this might further explain the rationale for pursuing data that captures less formalized unions. We can and will be exploring these relationships with additional waves of data.

We also expect UF to be an important correlate of key social and health outcomes. While we did not focus on health outcomes in this analysis, preliminary results from ongoing work are promising. For example, we find a high and positive correlation between UF and relationship quality, suggesting that a more formalized union may support better mental health outcomes for women and, by extension, better child outcomes. In ongoing work on food insecurity and children's nutritional status, the results suggest that UF has a much stronger moderating effect on the relationship between kin network and food security than the conventional marital

status measure. We find a similar result using height-for-age as an outcome. We plan to advance this line of analysis in our next steps.

In addition, capturing the UF process can help us document dynamics at the intersection of family change, gender inequality, and social stratification across African societies. While we describe here our work in low-income communities alone, we have also collected narratives on union histories from women and men in middle and higher income communities in Nairobi to begin to consider how marriage change is taking place across social status. Our initial findings suggest that the same processes are emphasized among higher income community members; however, their unions are more likely to involve bridewealth payment and ceremonies, particularly church weddings. For some, raising funds for these celebrations constituted a unique step in their marriage process. These findings suggest what others have found in Southern Africa, that formalized marriage processes (e.g., engagement celebrations, church weddings) increasingly serve to "display and enact class boundaries" (Pauli 2018, 256). Recent work drawing on DHS data from Africa shows increasingly divergent trajectories of union and family formation across social class (Stoebenau et al. 2021), with potential consequences for the less well-off. Therefore, understanding social stratification in the extent to which unions are formalized may be of particular importance for emerging determinants of social vulnerability. Future scholarship should apply the UF measure in heterogeneous socioeconomic contexts to assess the extent to which union and family formation practices are differentially patterned across social status, and in turn, whether such differences hold negative intergenerational consequences for the least well-off.

There are also important considerations at the intersection of gender and economic inequality. Women have expanding opportunities for wealth generation and growing legal protections in many countries in Africa. For example, in Kenya, women's and children's legal claims to inheritance have expanded under the new constitution and several laws that followed (Achuka 2017; Chigiti 2016; Muthoni 2018). However, these jural rights are dependent upon marriage certificates and divorce cases argued in a court of law and are therefore not equally accessible. While wealthier women, who are more likely to have an official marriage certificate, may be able to defend their rights and protections; poorer women may lack the social and economic capital necessary to avail themselves of such resources, even if they have a formal certificate. Relevant here are the new DHS measures on marriage certificates, as this can help identify the extent to which the potential for seeking legal redress is socially stratified in other settings.

Integrating UF into data collection

We demonstrate the feasibility of capturing the timing of a series of salient processes of UF within the context of social change to marriage and

highlight the importance of a nuanced measure. We acknowledge that applying the UF module as presented here to large-scale cross-sectional surveys, such as the DHS, would be impractical. Moreover, it is too early in our work to offer prescriptive recommendations for how best to parsimoniously adapt this measure to such efforts. Rather, an important first step would be for other longitudinal studies across the continent, such as those carried out in demographic surveillance sites, to adapt and include similar UF measures. This would provide important contributions for understanding family change in each of these settings individually. Further, findings across multiple sites pointing to common UF processes of importance could then inform parsimonious measures amenable to large-scale surveys (e.g., introductions, bridewealth). That said, there are some transferable recommendations to offer. First, it is crucial to include steps in line with both increasing individualization of marriage (e.g., cohabitation, certificate) as well as the ongoing importance of kin involvement (e.g., introductions, bridewealth). Our data suggest that broader categorizations of UF can be used as a demographic control. For example, this might include a three-category measure that captures increasing formalization and distinguishes salient kin involvement steps: cohabitation only, introductions (with or without cohabitation), additional formalization steps. Second, it will be important going forward, particularly if marriage change continues to become increasingly socially stratified, to identify and capture processes that accord varying degrees of social legitimacy, and not only those that are increasingly markers of wealth (e.g., religious weddings).

Conclusion

In conclusion, there is extensive variation in union and family formation across sub-Saharan Africa, reflective of rapid social change to marriage and family patterns, as well as high levels of economic uncertainty, particularly in burgeoning low-income urban informal settlement communities. The existing measure of marital status is simply inadequate to reflect how people attach meaning to and navigate the process of formalizing a union. The UF measure presented in this paper will better account for the increased heterogeneity in union and family formation, and the processual nature of marriage. Further, when applied to a prospective study design, it will enable assessment of the importance of UF for union stability and kinship support, and the capacity to model whether and how this influences child well-being. Our ability to examine and understand extensive social change to family systems across context in the Global North has expanded significantly through several important longitudinal studies of marriage and family change. As we seek to achieve ambitious sustainable development goals in the Global South, we need the tools to understand how social and economic change are impacting family systems in that region, and what the

health and development consequences of this might be. Better measures of marriage and family are key to this effort.

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Conflicts of interest

None of the authors have a conflict of interest to declare.

Ethical review

This study protocol was reviewed and approved by the University of Maryland Institutional Review Board, the African Population and Health Research Center IRB, the Health Africa Ethics and Scientific Review Committee (AMREF) in Nairobi, Kenya, and the National Commission for Science, Technology, and Innovation, Kenya.

Data availability statement

All data will be made publicly available in accordance with NIH guidelines through the project website.

Note

1 The term "dowry" typically refers to transfers from the wife's kin to the husband's upon marriage; however, in our study setting the term "dowry" is used to refer to payments made by the man and/or his kin (often including cash and livestock) to the woman's kin, either in a single payment or through multiple installments.

References

Achuka, Vincent. 2017. "Get Marriage Certificates, AG Githu Muigai." *The Saturday Standard*, August.

Antoine, P., M. Razafindrakoto, and F. Roubaud. 2001. "Contraints de rester jeunes ? Evolution de l'insertion urbaine dans trois capitales africaines : Dakar, Yaoundé, Antananarivo." In *Les*

jeunes, hantise de l'espace public dans les sociétés du Sud, In Autrepart N 18: 17–36. Paris: IRD-Editions/Editions de l'Aube.

Antoine, P., Adjamagbo, A., Ametepe, F., Beguy, D., Dial, F. B., Ferrand, M., and Tichit, C. 2009. *Fuzzy States and Complex Trajectories: Observation, modelisation and interpretation of life histories*. Paris: Ined Editions.

Beguy, Donatien, Joyce Mumah, and Lindsey Gottschalk. 2014. "Unintended Pregnancies among Young Women Living in Urban Slums: Evidence from a Prospective Study in Nairobi City, Kenya." *PLoS One* 9(7): e101034. http://journals.plos.org/plosone/article?id https://doi.org/10.1371/journal.pone.0101034.

Bertrand-Dansereau, Anaïs, and Shelley Clark. 2016. "Pragmatic Tradition or Romantic Aspiration? The Causes of Impulsive Marriage and Early Divorce among Women in Rural Malawi." *Demographic Research* 35: 47–80.

Billari, Francesco C. 2001. "Sequence Analysis in Demographic Research." *Canadian Studies in Population* 28(2): 439–458.

Bocquier, P., and A. Khasakhala. 2009. "Factors Influencing Union Formation in Nairobi, Kenya." *Journal of Biosocial Science* 41(4): 433–455. https://doi.org/10.1017/s0021932009003319. <Go to ISI>://WOS:000267716100001.

Braun, Virginia, and Victoria Clarke. 2006. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3 (2): 77–101.

Calves, A. E., and D. Meekers. 1999. "The Advantages of Having Many Children for Women in Formal and Informal Unions in Cameroon." *Journal of Comparative Family Studies* 30(4): 617–639. <Go to ISI>://WOS:000082444700004.

Calvès, Anne-Emmanuèle. 1999. "Marginalization of African Single Mothers in the Marriage Market: Evidence from Cameroon." *Population Studies* 53(3): 291–301.

Calvès, Anne-Emmanuèle. 2016. "First Union Formation in Urban Burkina Faso: Competing Relationship Transitions to Marriage or Cohabitation." *Demographic Research* 34: 421–450.

Chae, Sophia, Victor Agadjanian, and Sarah R. Hayford. 2021. "Bridewealth Marriage in the 21st Century: A Case Study from Rural Mozambique." *Journal of Marriage and Family* 83(2): 409–427. https://doi.org/10.1111/jomf.12725. <Go to ISI>://WOS:000568898800001.

Chigiti, John. 2016. "Rights of Children Born Out of Wedlock Reviewed." *The Star*, June 13, 2016, 2016.

Clark, Shelley, and Sarah Brauner-Otto. 2015. "Divorce in Sub-Saharan Africa: Are Unions Becoming Less Stable?" *Population and Development Review* 41(4): 583–605.

Clark, Shelley, and Dana Hamplová. 2013. "Single Motherhood and Child Mortality in Sub-Saharan Africa: A Life Course Perspective." *Demography* 50(5): 1521–1549.

Clark, Shelley, Alissa Koski, and Emily Smith-Greenaway. 2017. "Recent Trends in Premarital Fertility across Sub-Saharan Africa." *Studies in Family Planning* 48(1): 3–22.

Clark, Shelley, Sangeetha Madhavan, Cassandra Cotton, Donatien Beguy, and Caroline Kabiru. 2017. "Who Helps Single Mothers in Nairobi? The Role of Kin Support." *Journal of Marriage and Family* 79(4): 1186–1204.

Clark, Shelley, Sangeetha Madhavan, and Caroline Kabiru. 2018. "Kin Support and Child Health: Investigating Two Approaches in an African Slum." *Social Science Research* 76: 105–119.

Cole, Jennifer, and Lynn M Thomas. 2009. *Love in Africa*. Chicago: University of Chicago Press.

DeRose, L. F., A. Salazar-Arango, P. Corcuera Garcia, M. Gas-Aixendri, and R. Rivera. 2017. "Maternal Union Instability and Childhood Mortality Risk in the Global South, 2010–14." *Population Studies (Cambridge)* 71(2): 211–228. https://doi.org/10.1080/00324728.2017.1316866. https://www.ncbi.nlm.nih.gov/pubmed/28508707.

DESA, UN. July 2021 2021. *The Sustainable Development Goals Report 2021*. New York: UN DESA.

Eloundou-Enyegue, Parfait Martial. 2004. "Pregnancy-Related Dropouts and Gender Inequality in Education: A Life-Table Approach and Application to Cameroon." *Demography* 41(3): 509–528. file://J:\pdfs\2004%20Parfait_Pregnancy%20related%20dropouts%20and%20gender%20inequality.pdf.

Emina, Jacques, Donatien Beguy, Eliya M Zulu, Alex C Ezeh, Kanyiva Muindi, Patricia Elung'ata, John K Otsola, and Yazoumé Yé. 2011. "Monitoring of Health and Demographic Outcomes in

Poor Urban Settlements: Evidence from the Nairobi Urban Health and Demographic Surveillance System." *Journal of Urban Health* 88(2): 200–218.

Evans-Pritchard, Edward E. 1950. "Marriage Customs of the Luo of Kenya." *Africa* 20(2): 132–142.

Finlay, J. E., G. Fink, D. C. McCoy, L. C. Tavarez, J. Chai, G. Danaei, M. Ezzati, W. Fawzi, and M. C. S. Fawzi. 2016. "Stunting Risk of Orphans by Caregiver and Living Arrangement in Low-Income and Middle-Income Countries." *Journal of Epidemiology and Community Health* 70(8): 784–790. https://doi.org/10.1136/jech-2015-206346. <Go to ISI>://WOS:000380152600009.

Garenne, Michel, and Julien Zwang. 2006. *Premarital Fertility and Ethnicity in Africa*. DHS Comparative Reports No. 13. Calverton, MD: Macro International.

Giddens, Anthony. 1991. *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Stanford, CA: Stanford University Press.

Hakansson, N Thomas. 1994. "The Detachability of Women: Gender and Kinship in Processes of Socioeconomic Change among the Gusii of Kenya." *American Ethnologist* 21(3): 516–538.

Hattori, Megan Klein, and F. Nii-Amoo Dodoo. 2007. "Cohabitation, Marriage, and 'Sexual Monogamy' in Nairobi's Slums." *Social Science & Medicine* 64(5): 1067–1078. https://doi.org/10.1016/j.socscimed.2006.10.005. <Go to ISI>://WOS:000245155000006.

Hertrich, Veronique. 2013. "Freer Unions, More Complex Itineraries? Male Premarital Life In Rural Mali." *Journal of Comparative Family Studies* 44 (3): 361-+. <Go to ISI>://WOS:000320833200006.

Hetherington, P. 2001. "Generational Changes in Marriage Patterns in the Central Province of Kenya, 1930–1990." *Journal of Asian and African Studies* 36(2): 157–180. https://doi.org/10.1177/002190960103600201. <Go to ISI>://WOS:000169345000001.

Hirsch, Jennifer S., Holly Wardlow, Daniel Jordan Smith, Harriet Phinney, Shanti Parikh, and Constance A Nathanson. 2009. *The Secret: Love, Marriage, and HIV*. Nashville: Vanderbilt University Press.

Horne, Christine, F. Nii-Amoo Dodoo, and Naa Dodua Dodoo. 2013. "The Shadow of Indebtedness: Bridewealth and Norms Constraining Female Reproductive Autonomy." *American Sociological Review* 78(3): 503–520.

Hosegood, V., N. McGrath, and T. Moultrie. 2009. "Dispensing with Marriage: Marital and Partnership Trends in Rural KwaZulu-Natal, South Africa 2000–2006." *Demographic Research* 20: 279–312. <Go to ISI>://000264370700001.

Houle, Brian, Alan Stein, Kathleen Kahn, Sangeetha Madhavan, Mark Collinson, Stephen M Tollman, and Samuel J Clark. 2013. "Household Context and Child Mortality in Rural South Africa: The Effects of Birth Spacing, Shared Mortality, Household Composition and Socio-Economic Status." *International Journal of Epidemiology* 42(5): 1444–1454.

Hunter, Mark. 2016. "Is It Enough to Talk of Marriage as a Process? Legitimate Co-habitation in Umlazi, South Africa." *Anthropology Southern Africa* 39(4): 281–296.

Jackson, Cecile. 2015. "Modernity and Matrifocality: The Feminization of Kinship?" *Development and Change* 46(1): 1–24.

Johnson-Hanks, Jennifer. 2006. *Uncertain Honor: Modern Motherhood in an African Crisis*. Chicago: University of Chicago Press.

Kaler, Amy. 2001. "'Many Divorces and Many Spinsters's: Marriage as an Invented Tradition in Southern Malawi, 1946–1999." *Journal of Family History* 26(4): 529–556.

Kimani-Murage, Elisabeth W., Jean-Christophe Fotso, Thaddaeus Egondi, Benta Abuya, Patricia Elungata, A. K. Ziraba, C. W. Kabiru, and N. Madise. 2014. "Trends in Childhood Mortality in Kenya: The Urban Advantage Has Seemingly Been Wiped Out." *Health & Place* 29: 95–103.

Madhavan, Sangeetha, Shelley Clark, Donatien Beguy, Caroline W. Kabiru, and Mark Gross. 2017. "Moving beyond the Household: Innovations in Data Collection on Kinship." *Population Studies* 71(1): 117–132.

Madhavan, Sangeetha, Shelley Clark, and Yuko Hara. 2018. "Gendered Emotional Support and Women's Well-Being in a Low-Income Urban African Setting." *Gender & Society* 32(6): 837–859.

Madhavan, Sangeetha, Abigail Harrison, and Christie Sennott. 2013. "Management of Non-marital Fertility in Two South African Communities." *Culture, Health & Sexuality* 15(5): 614–628.

Madhavan, Sangeetha, Linda Richter, and Shane Norris. 2016. "Father Contact Following Union Dissolution for Low-Income Children in Urban South Africa." *Journal of Family Issues* 37(5): 622–644.

Madhavan, Sangeetha, Linda Richter, Shane Norris, and Victoria Hosegood. 2014. "Fathers' Financial Support of Children in a Low Income Community in South Africa." *Journal of Family and Economic Issues* 35(4): 452–463.

Madhavan, Sangeetha, and Nicholas Townsend. 2007. "The Social Context of Children's Nutritional Status in Rural South Africa 1." *Scandinavian Journal of Public Health* 35(69_suppl): 107–117.

Meekers, D. 1992. "The Process of Marriage in African Societies—A Multiple Indicator Approach." *Population and Development Review* 18(1): 61–78. https://doi.org/10.2307/1971859. <Go to ISI>://WOS:A1992JN64000003.

Meekers, D. 1994. "Combining Ethnographic and Survey Methods—A Study of the Nuptiality Patterns of the Shona of Zimbabwe." *Journal of Comparative Family Studies* 25(3): 313–328. <Go to ISI>://WOS:A1994NV73700002.

Middleton, John. 1960. "Social Change among the Lugbara of Uganda/La Transformation de la Societe Traditionnelle chez les Lugbara." *Civilisations*: 10(4): 446–456.

Mojola, Sanyu A. 2014. *Love, Money, and HIV: Becoming a Modern African Woman in the Age of AIDS*. Berkeley, CA: University of California Press.

Mumah, Joyce N., Stephen Mulupi, Yohannes D. Wado, Boniface A. Ushie, Deladem Nai, Caroline W. Kabiru, and Chimaraoke O. Izugbara. 2020. "Adolescents' Narratives of Coping with Unintended Pregnancy in Nairobi's Informal Settlements." *PloS ONE* 15(10): e0240797.

Muthoni, Kamau. 2018. "Children Have a Stake on Property after Divorce, Says Court." *The Standard Digital* November 17, 2018, 2018.

Odimegwu, C., P. Ndagurwa, M. G. Singini, and O. J. Baruwa. 2018. "Cohabitation in Sub-Saharan Africa: A Regional Analysis." *Southern African Journal of Demography* 18(1): 111–170.

Onono, Maricianah A., George W. Rutherford, Elizabeth A. Bukusi, Justin S. White, Eric Goosby, and Claire D. Brindis. 2020. "Political Prioritization and the Competing Definitions of Adolescent Pregnancy in Kenya: An Application of the Public Arenas Model." *PloS ONE* 15(9): e0238136.

Parikh, Shanti. 2016. *Regulating Romance: Youth Love Letters, Moral Anxiety, and Intervention in Uganda's Time of AIDS*. Nashville: Vanderbilt University Press.

Pauli, J. 2018. "Pathways into the Middle: Rites of Passage and Emerging Middle Classes in Namibia." In *Middle Classes in Africa: Changing Lives and Conceptual Challenges*, edited by L. Kroeker, D. Okane and T. Scharrer, 249–272. Cham: Palgrave Macmillan.

Pike, Isabel. 2021. "Men's Economic Status and Marriage Timing in Rural and Semi-Urban Malawi." *Social Forces* 100(1): 113–136. https://doi.org/10.1093/sf/soaa092. <Go to ISI>://WOS:000687760100030.

Pike, Isabel, Sanyu A Mojola, and Caroline W Kabiru. 2018. "Making Sense of Marriage: Gender and the Transition to Adulthood in Nairobi, Kenya." *Journal of Marriage and Family* 80(5): 1298–1313.

Poulin, Michelle, Kathleen Beegle, and Hongwei Xu. 2021. "Premarital Fertility and Marital Timing in Malawi." *Studies in Family Planning* 52(2): 195–216. https://doi.org/10.1111/sifp.12158. <Go to ISI>://WOS:000659315100001.

Rabie, Stephan, Sarah Skeen, and Mark Tomlinson. 2020. "Fatherhood and Early Childhood Development: Perspectives from Sub-Saharan Africa." In *Handbook of Fathers and Child Development: Prenatal to Preschool*, edited by Hiram E. Fitzgerald, Kai von Klitzing, Natasha J. Cabrera, Júlia Scarano de Mendonça, and Thomas Skjøthaug, 459–471. Cham: Springer.

Radcliffe-Brown, Alfred Reginald. 1950. Introduction. In *African Systems of Kinship and Marriage*, edited by A. R. Radcliffe-Brown and Daryll Forde, 1–85. London: Routledge.

Sennott, Christie, Sangeetha Madhavan, and Youngeun Nam. 2021. "Modernizing Marriage: Balancing the Benefits and Liabilities of Bridewealth in Rural South Africa." *Qualitative Sociology* 44(1): 55–75.

Sennott, Christie, Georges Reniers, F Xavier Gómez-Olivé, and Jane Menken. 2016. "Premarital Births and Union Formation in Rural South Africa." *International Perspectives on Sexual and Reproductive Health* 42(4): 187–196.

Shapiro, David, and Tesfayi Gebreselassie. 2014. "Marriage in Sub-Saharan Africa: Trends, Determinants, and Consequences." *Population Research and Policy Review* 33(2): 229–255.

Smith-Greenaway, Emily, and Shelley Clark. 2018. "Women's Marriage Behavior Following a Premarital Birth in Sub-Saharan Africa." *Journal of Marriage and Family* 80(1): 256–270.

Smith, Daniel Jordan. 2007. "Modern Marriage, Men's Extramarital Sex, and HIV Risk in Southeastern Nigeria." *American Journal of Public Health* 97(6): 997–1005. https://doi.org/10.2105/AJPH.2006.088583. http://www.ncbi.nlm.nih.gov/pubmed/17463366.

Smith, Daniel Jordan. 2004. "Contradictions in Nigeria's Fertility Transition: The Burdens and Benefits of Having People." *Population and Development Review* 30(2): 221–238.

Smith, Daniel Jordan. 2020. "Masculinity, Money, and the Postponement of Parenthood in Nigeria." *Population and Development Review* 46(1): 101–120. https://doi.org/10.1111/padr.12310.

Kenya National Bureau of Statistics, Ministry of Health (Kenya), and ICF International. 2015. *Kenya Demographic and Health Survey 2014*. Rockville, MD: ICF International.

Stoebenau, Kirsten, Sangeetha Madhavan, Emily Smith-Greenaway, and Heide Jackson. 2021. "Economic Inequality and Divergence in Family Formation in Sub-Saharan Africa." *Population and Development Review* 47: 887–912.

Wainaina, Caroline W., Estelle Monique Sidze, Beatrice W. Maina, Icoquih Badillo-Amberg, Hazel Odhiambo Anyango, Faith Kathoka, Dorcas Khasowa, and Collins E. M. Okoror. 2021. "Psychosocial Challenges and Individual Strategies for Coping with Mental Stress among Pregnant and Postpartum Adolescents in Nairobi Informal Settlements: A Qualitative Investigation." *BMC Pregnancy and Childbirth* 21: 1–11.

Wamukoya, Marylene, Damazo T. Kadengye, Samuel Iddi, and Claudious Chikozho. 2020. "The Nairobi Urban Health and Demographic Surveillance of Slum Dwellers, 2002–2019: Value, Processes, and Challenges." *Global Epidemiology* 2: 100024.

Whyte, S. R. 2005. "Going Home? Belonging and Burial in the Era of AIDS." *Africa* 75(2): 154–172. https://doi.org/10.3366/afr.2005.75.2.154. <Go to ISI>://WOS:000231518700002.

Wyrod, Robert. 2016. *AIDS and Masculinity in the African City*. Berkeley, CA: University of California Press.