Divorce in Sub-Saharan Africa: Are Unions Becoming More Stable?

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Abstract

Divorce is one of the main drivers of family instability in sub-Saharan Africa. Yet surprisingly little is known about divorce in this region, primarily because of limited data. Using data from 98 Demographic and Health Surveys and novel estimation techniques, we 1) provide the first systematic estimates of divorce across 33 countries; 2) assess trends in divorce in 17 countries; and 3) investigate the key country-level correlates of divorce both across and within countries. Despite considerable geographic variation, our estimates show that divorce is common in most countries. However, contrary to expectations, we find no evidence that divorce is increasing. Instead, divorce has been either stable or declining in recent decades. To help explain these unexpected findings, we show that socioeconomic factors associated with industrialization have countervailing effects on divorce. Urbanization and female employment are associated with higher levels of divorce, while age at first marriage and female education correspond to lower rates. These findings have important implications for current and future family dynamics in sub-Saharan Africa.

Sub-Saharan Africa is known to have exceptionally high levels of family instability. Migration, child fostering, and widowhood, especially in the aftermath of civil conflicts and the AIDS epidemic, separate many children from their parents, particularly their fathers. As a result, up to 60% of children in some countries do not live with their fathers (McDaniel and Zulu 1996; Posel and Devey 2006). These various population processes also mean children's family structures change frequently (Goldberg 2013a; 2013b). Yet, until recently an important source of family instability, divorce, has attracted surprisingly little attention from demographers and other researchers, outside of a handful of countries, namely Malawi, Ghana, and Ethiopia, where divorce is thought to be particularly high. Systematic estimates of divorce across multiple countries are currently unavailable, limiting our ability to accurately assess where divorce is most or least common. Furthermore, there have been no analyses of trends in divorce over time, despite profound changes in other marital practices, growing women's autonomy, weakening kinship ties, and rapid urbanization, all of which may impact the likelihood of divorce.

This conspicuous knowledge gap regarding divorce in sub-Saharan Africa can be directly attributed to the absence of high quality data. Standard measures of divorce rates usually rely on data from vital registration systems which are inadequate in nearly all countries in sub-Saharan Africa. Consequently, country-level estimates of divorce rates are missing from this region in standard statistical compilations, such as *The Demographic Yearbook* (United Nations 2010).[1] In addition, nationally representative demographic surveys, which can help fill the data gaps for other missing vital statistics (such as fertility and mortality), collect very limited data on union dissolution. Many censuses and the Demographic and Health Surveys (DHSs) collect data on

[1] For South Africa, the *Demographic Yearbook* reports a number of divorces, but fails to calculate a rate due to incomplete coverage.

current marital status only, which is then reported in the UN *World Marriage Data 2012* (United Nations 2013). Such data, unfortunately, tell us little about the risk of divorce as they do not account for the rate of remarriage, which can be quite high in sub-Saharan Africa (de Walque and Kline 2012). Thus, even Goode (1993) in his seminal work devoted to global divorce, *World Changes in Divorce Patterns*, fails to discuss trends in sub-Saharan Africa due to the absence of reliable data.

Despite that lack of systematic data, there is a widespread belief on the part of the media, academic researchers, and public opinion that divorce is increasing rapidly. A recent newspaper article in Ghana, for example, interviewed religious ministers who decried the "increasing spate of divorce" and admonished their members to stay true to their marital vows to remain together (All Ghana News 2014). Researchers also frequently assert that divorce is on the rise, but often justify these claims by making reference to dated ethnographic work in small populations (Amoateng and Heaton 1989, Hutchinson 1990). Others point to the rising number of women who are currently divorced (Locoh and Thiriat 1995; Ntoimo and Odimegwu 2012; Takyi 2001; Takyi and Broughton 2006). For example, using data from IPUMS, Ntoimo and Odimegwu (2012) argue that "in Cameroon, the population of married women who were separated, divorced or had absent spouses increased from 78,060 in 1976 to 129,000 in 2005," which they claim demonstrates an increase of 65% (pg. 2). There are several issues with relying on these types of statistics. First, emphasizing the total *number* of divorced women fails to take into account population growth. Using the same data, we calculate that the *percentage* of women divorced, separated, and living apart actually fell from 4.2% in 1976 to 3.6% in 2005 in Cameroon (Minnesota Population Center 2014). Second, in such data it is unclear whether the category

"absent spouse" refers to women married to migrant workers. If so, then differences would also reflect changes in rates of migration. Lastly, as mentioned above, current rates of divorce are dependent on rates of remarriage, which may also be changing over time. Thus, it is clear that such statistics are inadequate and possibly misleading.

This paper aims to improve the quality of research on divorce in sub-Saharan Africa by addresses three main research questions. First, how common is divorce across different countries and what is its geographic distribution? To answer this question, we provide the first—albeit imperfect—systematic estimates of divorce in 33 countries in sub-Saharan Africa. We find that although there is substantial geographic variation, divorce is common in most countries and far exceeds the risk of widowhood as a cause of union instability. Second, has divorce risen, declined, or remained the same in sub-Saharan Africa? To investigate this question, we assess trends in divorce estimates over time in 17 countries. Contrary to general expectations (including our own), divorce is not increasing. Instead it is stable or declining in most countries. Our last research question is whether factors associated with industrialization are significantly correlated with divorce at the country level? To better understand these unexpected trends in divorce, we assess which factors are associated with divorce both across and within countries over time. Although divorce is positively associated with urbanization and women's employment, it is negatively associated with women's medium age at first marriage and secondary schooling. Thus, we tentatively conclude that the large gains in women's schooling and age at first marriage witnessed over the last two decades may be creating more stable unions even in the midst of rising urbanization and women's employment. Our findings offer a deeper understanding of the complex nature of divorce in this culturally, economically, and socially diverse region and

challenge conventional wisdom about the past and future of unions in sub-Saharan Africa.

The impact of divorce in sub-Saharan Africa

The failure to collect systematic data on divorce in sub-Saharan Africa in nationally-representative surveys is understandable given its inherent challenges. In a region where union formation is often an informal and fluid process (Bledsoe 1990; Bledsoe and Pison 1994; Meekers 1992), identifying precise dates of union dissolution can be difficult, if not impossible. As one example, the retrospective dates of unions reported in one study in Malawi were fraught with inconsistencies (Chae 2014). Nonetheless, the inability to precisely measure the timing of divorce should not be conflated with the lack of its importance. Abundant evidence drawing mainly from North America and Europe shows that union status is closely associated with adults' psychological well-being, physical health, and financial security (Amato 2000; Amato 2010; Beirman, Fazio, and Millkie 2006; Hughes and Waite 2009; Smock, Manning, and Gupta 1999, Waite and Gallagher 2000; Williams and Dunne-Bryant 2006; Williams and Umberson 2004; Zhang and Hayward 2006). An even larger literature documents that divorce negatively impacts children's well-being. This work shows that compared to children whose parents are married, children with divorced parents' typically have slower cognitive development, lower educational attainment, poorer social skills, and worse health outcomes (Amato 2000; Amato 2010; Frisco, Muller, and Frank 2007; Gennetian 2005; Hango and Housekneck 2005; Kim 2011; Luo et al. 2004; Magnuson and Berger 2009; Steele, Sigle-Rushton and Kravdal 2009; Sun and Li 2002).

The common finding that reduced economic resources following divorce account for about half

of the negative effects on children (Amato 2000) suggests that poverty exacerbates the effects of divorce. Thus, one might expect divorce to be more detrimental for both adults and children in low-income settings where resources are already strained. The scarce evidence of the effects of divorce in sub-Saharan Africa is consistent with this expectation. In their study of 11 countries in sub-Saharan Africa, Clark and Hamplová (2013) find that while the children of all single mothers tend to be disadvantaged, children whose mothers were divorced were more likely to die compared to children of never-married or widowed mothers. Another recent article showed that children of divorced parents in Burkina Faso were less likely to enter school and more likely to die before the age of five (Thiombiano et al. 2013). In Malawi, children have lower educational attainment if their parents are divorced (Chae 2011).

Although many of these divorced mothers will remarry quickly (de Walque and Kline 2012), studies from the U.S suggest that are good reasons to believe that remarriage may not entirely mitigate the negative effects of divorce and in some instances it may exacerbate them (Brown 2006; Hofferth 2006; Sweeney 2010; Wallerstein, Lewis, and Rosenthal 2013). A study in Mali demonstrated that the higher rates of poverty found among widows persists even after remarriage (van de Walle 2011). Remarriage may also coincide with children being fostered and other tumultuous family transitions (Grant and Yeatman. 2013). Innovative research in the U.S. argues that it is not union dissolution *per se*, but the sequel of disruptive family events that it often precipitates such as migration, cohabitation, remarriage, and further union dissolutions, that have negative effects on children's development (Amato 2010; Cavanagh and Huston 2006; Osborne and McLanahan 2007). Building on this work, Goldberg found that family instability negatively influenced adolescents' pathways into adulthood in both South Africa (Goldberg 2013a) and

Kenya (Goldberg 2013b).

Correlates of divorce in sub-Saharan Africa

Researchers have long-sought to identify the correlates of divorce to better understand variation among individuals or across countries and to predict changes in divorce over time. Goode (1963, 1993) argued that industrialization, by which he meant a host of socioeconomic changes including urbanization, the breakdown of kinship ties, women's increased education and employment opportunities, and the greater pursuit of individual self-interest cause higher levels of divorce. Consequently, not only would more industrialized countries have higher rates of divorce than less industrialized countries, but also divorce rates would increase as countries industrialized. This hypothesis is widely accepted by demographers and is broadly consistent with the trends in divorce experienced in Westernized countries in North America and Europe, which rose from the turn of the 20th century through the mid-1980s (Amato 2010; Lester 1996).

Yet, Goode (1993) also provided counter examples where divorce rates appeared to fall during the process of industrialization. This tended to happen in countries with "stable high-divorce systems" that were supported by traditional practices that are conducive to union instability. For example, he discusses the traditional Japanese practice during the Tokugawa period and extending into the early Meiji period which allowed for young brides to be returned to their natal homes at the bequest of the husbands' parents with few long-term consequences for the brides. He also mentions the Muslim practice which grants men the power to divorce their wives without cause and with no legal intervention. Such practices may be implicated in the high

divorce rates found among Muslim populations in Malaysia and Indonesia. Nonetheless, according to Goode (1963, 1993), although industrialization may disrupt these traditional practices in stable, high-divorce countries leading to a decline in divorce, this decline is likely to be temporary. Eventually other forces of industrialization (women's autonomy, urbanization, and decline of kinship support) will prevail and divorce rates will begin to rise. Jones (1997) compellingly demonstrates this negative association between industrialization and divorce rates in Islamic Southeast Asia, specifically in Malaysia and Indonesia, where divorce rates fell by two-thirds between 1950 and 1990, a period of rapid industrialization. In contrast to Goode, however, Jones largely attributes this startling decline to the rising age at first marriage, declining kin engagement in the selection of spouses, and increases in "love" marriages, which he argues are inherently more stable than arranged marriages.

Most of the research on divorce in sub-Saharan Africa examines the predictors of divorce at the individual-level within one specific country. Moreover, nearly all of this work has been conducted in a handful of countries in sub-Saharan Africa, where divorce is perceived to be especially high: Ghana (Takyi 2001; Takyi and Broughton 2006; Takyi and Gyimah 2007), Malawi (Grant and Soler-Hampejsek 2014; Reniers 2008; Reniers 2003), Nigeria (Brandon 1990; Gage-Brandon 1992), and Ethiopia (Tilson and Larsen 2000). Some of these findings at the individual level are consistent with the argument that increases in women's autonomy will elevate divorce rates as better educated women will be increasingly dissatisfied with traditional unions and employed women will have the means to leave unacceptable relationships. Takyi and Broughton (2006) explicitly support the "women's autonomy" explanation and show that Ghanaian women with primary school education are more likely to get divorced than women

with no education (Takyi and Gyimah 2007). In Malawi, however, one study shows that the reverse is true (Grant and Soler-Hampejsek 2014) and another study shows no effect for education (Reneirs 2008). The link between women's employment outside the household and divorce is consistently weak across studies and regardless of women's type of employment (Brandon 1990; Locoh and Thiriat 1995; Takyi 2001; Takyi and Broughton 2006).

Empirical evidence in sub-Saharan Africa on the effect of weaking kin ties on divorce is limited. Goode (1963) and Tayaki (2001) argue that arranged marriages are more stable because they are the uniting of two families not of two individuals. Kin are, therefore, more invested in keeping the union together. In some instances, maternal relatives may have an economic incentive to avoid divorce as they would be required to return all or a portion of the brideprice if the union ends. Jones (1997), however, argues for the opposite perspective and contends that "love" marriages are more stable. He contends that not only are individuals better at finding suitable compainions, but also that love marriages tend to occur at older ages when the bride and groom are more mature. Data on whether unions are arranged or compassionate are rarely collected, but there has been some empirical research demonstrating that marital quality is reportedly higher for those who had greater participation in spouse choice in Asia (Allendorf and Ghimire 2013; Pimentel 2000; Xu and Whyte 1990). To the extent that marital discord contributes to divorce (Jennings 2014), one would expect the type of union (i.e. love vs arranged) to be related to divorce. Additionally, studies both in the U.S. (Martin and Bumpass 1989) as well as in Africa (Locoh and Thiriat 1995; Reniers 2003; Takyi and Gyimah 2007; Tilson and Larsen 2000) show a strong negative correlation between age at first marriage and divorce.

One of the most striking findings from the work on divorce in Africa is that is that women in matrilineal societies are significantly more likely to get divorced than those living in patrilineal societies in both Ghana (Takyi and Broughton 2006; Takyi and Gyimah 2007) and Malawi (Reniers 2003). According to Goode (1993), matrilineal societies are a clear example of the traditional practices that lead to stable, high divorce systems because they increase women's autonomy and lower the costs of divorce for women. Thus, although the absence of data prevents him from further investigation, he speculates that "[w]hen life in urbanizing and industrializing milieu begins to weaken kinship systems, the effects on the stability of marriages under matrilineal and patrilineal kinship systems should differ" (Goode 1963, pg. 196). In other words, industrialization should coincide with a lowering of the rates of divorce in matrilineal societies and an increase of divorce in patrilineal cultures.

Three other variables, polygyny, fertility, and HIV/AIDS risks, have also been linked to divorce at the individual-level. The relationship between polygyny and divorce is complex. On the one hand, polygyny allows husbands to take another wife without divorcing their current wife. On the other hand, women may be more likely to want to leave polygynous unions. Studies find that the effect of polygyny depends on the wife's rank (Reniers 2003) and total number of wives (Gage-Brandon 1992). Other studies have demonstrated that the risk of divorce declines as the number of children rises, but often total number of children is endogenous and not carefully measured (Tilson and Larsen 2000). Lastly, studies from Malawi indicate that the AIDS epidemic may increase the risk of divorce since men and women who suspect their spouses are infected are more likely to get divorced (Grant and Soler-Hampejsek 2014; Reniers 2008). In sum, studies at the individual level paint a complex picture between markers of industrialization

and divorce. Assessing this relationship at the country level help clarify how global forces linked to industrialization may be related to family changes within societies.

Data

For our analyses, we use data from the Demographic and Health Surveys (DHSs). These publically-available, nationally-representative, cross-sectional surveys began collecting data from countries in sub-Saharan Africa in the late 1980s. To date (January 2015), they have conducted a total of 107 surveys in 33 countries in sub-Saharan Africa (approximately 3 per country; minimum=1 and maximum=5). The multiple cross-sectional rounds of the DHS have been conducted typically about five years apart. Although the questionnaire differs across countries and has been modified over time (there have been six different versions or "phases" of the DHS questionnaire which have been used to date), overall the questions are remarkably consistent across countries and across the different phases allowing for an exceptionally high degree of comparability. Each DHS collects data on a representative sample of between 3,000 and 40,000 women age 15-49, using a two-stage sampling process.[2] In the first stage, clusters are systematically selected based on their population size. In the second stage, households are randomly selected within these clusters. All women age 15-49 in these households are interviewed.

To answer our first research question regarding the geographic distribution of divorce across sub-Saharan Africa, we rely on a sub-sample of the most recent DHS in all of the 33 countries.

[2] Even at a relatively low estimate of 5,000 women per country, this suggests that well-over a half million women have been interviewed in the DHSs used in this paper.

For 30 of these countries, the most recent DHS was conducted within the last 10 years, with the oldest survey conducted in Chad in 2004. The most recent DHSs in three countries, however, were significantly older surveys (South Africa 1998, Togo 1998, and Central African Republic 1994-95). More recent data from these countries is not available either because they are no longer considered low-income countries (South African) or because of on-going political instability (Central African Republic and Togo). A full list of all countries included and the dates of their most recent surveys can be found in Table 2.

To address our second research question concerning trends in divorce over time, we use a subsample of all rounds of the DHS in all countries whose surveys spanned at least 15 years and had at least three rounds of data collection. A total of 17 countries meet these criteria. [3] Eight of these countries (Cameroon, Ghana, Liberia, Niger, Nigeria, Senegal, Uganda, and Zimbabwe) had surveys that spanned at least 20 years. In Table 2, we indicate which countries are eligible for time trend analyses with an "*" next to their names.

Lastly, for Question 3, we use multivariate analyses to identify country-level correlates of divorce both across countries and over time. For these analyses, we use 98 of the 107 available DHS surveys conducted in all 33 countries. We cannot use nine of these surveys because they are missing data on key dependent and independent variables.

Measures

To assess geographic variation (Question 1), change over time (Question 2), or correlates of

[3] Burundi was excluded from these trend analyses because it had only two surveys. Senegal 1997 and Mali1987 were excluded because they did not include the question regarding the total number of unions.

divorce (Question 3), we need comparable, country-level estimates the risk of divorce by the time since first union (i.e. X% of first unions that end within the first 20 years). To make such estimates, we would ideally have data on whether a woman's first union ended in divorce and how long all unions last. In the absence of such data, we need to rely on innovative methods to obtain the best estimates that are feasible with currently available data.

The DHS collects three critical measures of union status: 1) date of first union by the question "In what month and year did you start living with your (husband/partner)?"; 2) current union status (never-married, currently married, living with a man as married, divorced, separated, or widowed). Note that because we combine "currently married" and "living with a man as married," in this paper "marriage" refers to both formal marriages and informal marriages/cohabitation. Similarly, because we combine "divorced" and "separated," the term "divorced" in this paper includes to both formally divorced and separated women; and 3) total number of unions (0, 1 or 2 or more) from the question "Have you been married or lived with a man only once or more than once?" All women reporting two or more unions are considered to have ever been remarried. The wording of questions about the timing of first union, current marital status, and number of union are nearly identical across countries and over different rounds (or phases) of the DHS.[4]

From these questions, we can construct two useful indicators. First, we estimate the time (in

[4] The order of questions about first union formation and union status changed somewhat across the six phases of the DHS to accommodate the inclusion of questions about other sexual partners. Most of these changes occurred between phase 2 (1988-1993) and phase 3 (1992-1997). For example, prior to phase 3, all separated women were referred to as "no longer living together" in the questionnaire, although in the publically available DHS data files, these women are recoded as "separated." After phase 3, these women are categorized as "separated" in both the questionnaire and the data files.

years) since the first union began by subtracting the date of first union from the interview date. (Women who have never been in a union are not included in our analyses by years since first union.) Second, we create an indicator for whether the first union has dissolved through either divorce or widowhood by combining a) women who are currently divorced or widowed and b) women who are currently remarried. Using these two indicators, we estimate the proportion of women whose first union ended (through either divorce or widowhood) by time since first union began. We simply divide the number of women whose first union began X years prior but are no longer in their first union by the total number of women whose first union began X years prior. To improve the stability of our estimates, years since first union are grouped into six time intervals (0-4 years, 5-9 years, 10-14 years, 15-19 years, 20-24 years, and 25-29 years). Thus, we can estimate the proportion of unions that have ended, say 15-19 years, after they began.

To estimate the percentage of these unions that ended via divorce rather than by widowhood, we use Equation (1) shown in the Methods section below. For our analyses of geographic variation in divorce (Question 1) and correlates of divorce (Question 3), we focus on the interval 15 to 19 years since first union. For ease of exposition, we sometimes refer to this as the probability of divorce within the first 20 years, although using the interval 15-19 underestimates the true probability of divorce in the first 20 years as some women in this interval will get divorced before age 20. Furthermore, although unions continue to dissolve after 20 years, we highlight unions that have ended within the first 20 years of marriage because most of these divorced women will have young dependent children. Using data from all 107 DHSs conducted in sub-Saharan Africa, we find that on average over a quarter of all unions will end in divorce before their 20^{th} anniversary (26.6%) (Table 1).

(Insert Table 1 about here)

In addition to our measure for divorce, we develop country-level indicators for factors known to be associated with divorce at the individual-level in Africa. These include the percentage of women living in urban areas, working outside the household, ever attending secondary school, living in a monogamous (as opposed to polygynous) union, and the medium age at first marriage. Descriptive statistics of these factors are presented in Table 1 and reveal remarkable diversity across the sub-continent. The medium age at first marriage ranges from 14.9 to 28.2 years. In some countries nearly all women on in monogamous unions (96.6%), while in other more than half of women are in polygynous unions. Some countries are heavily urbanized (almost 90%) and others are almost exclusively rural with less than 4% of their populations living in urban areas. Lastly, indicators of women's autonomy such as female enrolment in secondary school also vary considerably across countries and over time. Overall, a quarter of women in these surveys attended secondary school, while nearly 60% worked outside of the household. All indicators in our models are derived as country averages from their respective year-specific DHSs and weighted to adjust for two-stage sampling procedures.

We also tested indicators for the national GPD per capita obtained from the World Bank database, the total fertility rate, and the percentage of the population infected with HIV, which is available in about half of our DHS survey. None of these variables was significantly associated with divorce. Thus, we have excluded them from our final models. Lastly, we were unfortunately not able to develop a reasonable country-level indicator of the percentage of matrilineal ethnic groups because the practices of many ethnic groups are not widely known and many ethnic groups in Africa follow a mix of matrilineal and patrilineal practices. Nonetheless, since we are

interested in assessing whether divorce is higher in matrilineal than in patrilineal groups and whether there are opposite trends in divorce in these two types of societies, we take a closer look at Ghana where matrilineal and patrilineal groups can be more easily identified. We classify all Akan ethnic groups as being matrilineal and all non-Akan ethnic groups (which comprise about 50% of the population) as being patrilineal.

Methods

One of our primary challenges is to develop a method to disentangle unions that end in divorce from those that end in widowhood. If a woman had only one union and is currently divorced, we know her first union ended in divorce and we can easily calculate the percentage currently divorced *(%CurDiv*). However, if a woman has had more than one union (i.e. she has ever remarried *(%Remar*), our limited data do not allow us to say with certainty how her first union ended. The probability that a remarried woman's previous union ended in divorce is a function of the risk of divorce (relative to widowhood) in each of the previous time periods *(%Div$_t$)* weighted by the risk of union dissolution in each previous time interval *(%UnionDis$_t$)*. We can estimate the risk of union dissolution in each time period *(%UnionDis$_t$)* by subtracting the probability of ever experiencing a union dissolution in t_1 from t_2, using the cumulative union dissolution probabilities estimated above. To interpret these proportions as cumulative probabilities of union dissolution, we draw parallels to well-known concepts of stationary populations. To approximate the relative risk of divorce in each time period (*%Div$_t$*), we use the proportion of currently divorced women among all currently formerly married (which includes currently divorced and currently widowed women) in each time period.

Thus, our equation for estimating divorce probabilities in each time interval (*T*) since union formation is as follows:

$$(1) \qquad \%EverDiv_T = \%CurDiv_T + \%Remar_T * \sum_{t=0-4}^{T} \%Div_t * \%UnionDis_t$$

Where *T* equals the time interval of interest, say 15-19 years since first union and *t* indicates all previous intervals (0-4 years, 5-9 years, and 10-14 years) preceding *T*. This approach takes into account changes in the relative risk of divorce (compared to widowhood) since time of first union. For example, in the first five years of marriage (0-4 years), over 95% of currently formerly married women are divorced. In contrast, among unions that were formed 25-29 years ago, the majority (typically between 70% and 85%) ended by the death of a spouse. This method, however, relies on the assumption that women are equally likely to remarry across all previous time periods, which may not be valid as remarriage may be more common if a union ends early. Since divorce is more likely to be the cause of early union disruption, this assumption may slightly underestimate our probabilities of divorce. In addition, these estimates assume that both divorcées and widows are equally likely to remarry. Whether this assumption is valid depends on the relative level of stigma, the amount of kin support, and the economic opportunities available to widows and divorcées, which is likely to vary across cultural settings.[5] Using Equation 1, the probability of widowhood can be easily calculated by subtracting the probability of divorce from the total probability of union dissolution for any given time interval.

To examine question 3, we use these estimates of the probability of divorce 15-19 years after

[5] Appling different weights or no weights to the distribution of remarried women between divorce and widowhood, changes the shape of these curves, but it does not alter the pattern of change over time.

first union are used as our dependent variables in our multivariate analyses. Random effects models are used to examine variation across countries and fixed effects models are employed to assess how the probability of divorce changes over time within countries. Our random effects models use data from all 98 DHSs from 33 countries to assess which factors (age of first marriage, women's education, urbanization, etc.) are associated with divorce at the country-level, taking into account that estimates of divorce may be clustered within countries. Our fixed-effects analyses examine how changes in these factors are associated with changes in divorce within countries over time. Because fixed effects methods require at least two periods of observation, we have dropped three countries (Central African Republic, South Africa, and Swaziland) with only one round of the DHS.

Robustness Checks

As a check of the robustness of our estimates of divorce, we conduct three further sets of analyses. First, we calculate the probability of divorce by age rather than by time since first union. Second, we adjust for respondent mortality in our estimates of divorce by age. Third, we examine patterns of total union dissolution (divorce and widowhood) and widowhood alone to check the impact of our assumptions about the relative risk of divorce and remarriage.

To calculate divorce by age, we follow Equation (1) except that *T* refers to age groups (15-19, 20-24, 25-29, 30-34, 35-39, 40-44) rather than years since first union. One of the disadvantages of this approach is that, like the crude divorce rate (defined as the number of new divorces per thousand people per year) this method considers never-married women to be at risk of divorce. Consequently, these estimates reflect the proportion of women who have never married in a

given age group. In countries, like those found in the southern tip of Africa, where the age at first marriage is relatively late and a growing proportion of women never marry, divorce rates by age will therefore be lower. Estimates by age are presented in Appendix 1.

The main advantage of estimating divorce by age is that it allows us to incorporate the risk of respondent mortality. One problem with looking at the cross-sectional proportion of women whose first unions ended is that some women who were married (and may or may not have experienced a union dissolution) have died by the time of the data collection. This means that the denominator is for these proportions is too low.[6] To accurately assess the probability that a woman will experience a union dissolution by age x we should use multi-state life tables using age-specific marriage and union dissolution rates. Unfortunately, these data are not available.

The Sullivan method has become increasingly popular as one way to estimate similar life experience probabilities (Imai and Soneji 2007). By applying cross-sectional prevalence rates to period mortality life tables it yields estimates of remaining years lived in different states. This approach has commonly been used to calculate disability free life expectancy (e.g. Klijs, Machenbach, and Kunst 2011; Mathers and Robine 1997; Nusselder, et al. 1996) and more recently to estimate the time spent as a grandparent (Margolis 2014). Just as previous Sullivan method applications essentially distribute person-years lived into person-years lived with or without a disability (the ${}_nL_x$ column), we distribute person-years lived into those lived having experienced a union dissolution and having never experienced a union dissolution. We apply the

[6] The numerator may also be influenced by mortality, but this is only a problem for the proportion estimates if women who experience union dissolution have dramatically different mortality rates than women who stay married to their first partner.

prevalence of divorce and widowhood estimated from DHS data to WHO life tables[7] and, because we also assume a stationary population, we can interpret the person-years lived as the number of people who have experienced (or not experienced) a union dissolution in that age group. This allows us to calculate the probability that a women will experience divorce or widowhood by a specific age adjusting for respondent mortality.

We apply the Sullivan method to our data (see Appendix 1) and show the percent of 15-19 year old women who will have experienced a divorce or become widowed by age 40-44 ($_{40}L_{44}/_{15}l_{19}$). As expected, these estimates are slightly lower than those by time since first marriage presented in Table 2 because they take into account the probability that some women will have died before reaching the age of 40 to 45. Previous research has documented that the Sullivan method produces unbiased and consistent estimates, assuming there were no large or sudden changes in transition rates (Imai and Soneji 2007; Mathers and Robine 1997).

Finally, we check the extent to which our assumptions about the relative probability of divorce versus widowhood and the rate of remarriage following divorce or widowhood may be driving our results. We estimate the probability of union dissolution, which because it combines both divorce and widowhood, does not rely on any assumptions about their relative importance (see Table 2 and Appendix 1). The patterns observed for union dissolution closely reflect those for divorce, which is not surprising since the majority of unions end through divorce. Next, we examine the trends in widowhood separately and find that the rates of widowhood rates have not changed dramatically over this time period, with the exception of a few countries which have

[7] We use 2012 WHO life tables, except for Togo, South Africa, and Central African Republic where we use 2000, 2000, and 1990 mortality information, respectively, to better approximate the DHS dates.

experienced a high level of conflict or suffered from severe AIDS epidemics (see Appendix 2).

Results

Estimates and Geographic Variation in Union Dissolution

To better understand how common divorce is across sub-Saharan Africa (Question 1), we provide estimates of union dissolution broken down into divorce and widowhood for 33 countries in sub-Saharan Africa in Table 2. All estimates shown are for the time interval 15-19 years after first union began. We find that on average a third (33.4%) of unions will have ended by this point with a quarter (25.0%) ending through divorce and 8.4% ending through spousal death. These averages mask substantial variation across the subcontinent with only 9.6% of unions in Mali ending in the first 20 years compared to over half in Liberia and Congo (Brazzaville). In all three of these countries the majority of these unions end in divorce (71.3% in Mali, 83.5% in Liberia, and 92.3% in Congo (Brazzaville)). One of the most striking features of these estimates is that divorce is far more common than widowhood. In 22 of the 33 countries, divorce is more than three times as high as widowhood. Only in Lesotho and Swaziland, which have experienced severe AIDS epidemics, does the proportion of women widowed exceed that of divorced.

(insert Table 2 about here)

Our estimates of divorce by age show many similarities to those by time since first union (see Appendix 1). Among women aged 40-44, on average, 37.2% will have experienced a union dissolution (24.5% through divorce and 12.6% through widowhood), indicating that although divorce remains almost twice as common as widowhood, widowhood becomes increasingly important as women age. Taking into account the respondent's own risk of mortality, lowers the risk that she will experience a union dissolution through either divorce or widowhood (21.0% and 10.6%, respectively). In general, however, there is remarkable consistency across all three estimates of divorce. The main differences between indicators based on time since first union and age can be attributed to differences in age at first marriage, which influence our estimates of divorce by age but not by time since first union. Thus, the greatest percentage change in these estimates of divorce are found in Lesotho, Swaziland, and Namibia which have comparatively high ages of first marriage (and non-marriage) and, consequently, relatively lower risk of divorce by aged 40-44.

In Figure 1, we depict divorce (15-19 years after first union) on a map of Africa. This spatial representation reveals some intriguing patterns. The highest rates of divorce occur in Liberia, the Central African Republic, and Congo-Brazaville with over 40% of unions ending in divorce less than 20 years before they began. Next, we see countries where divorce rates are generally thought to be high (Malawi, Ethiopia, and Ghana) included in a band of countries along the eastern side of Africa (also including Uganda, Tanzania, Mozambique, and Madagascar) as well as on the western coast just south of the Sahel (see also Gabon). Divorce rates are more moderate in the remainder of countries in central and southern Africa, while divorce appears least common in the Sahel countries of Mali, Burkina Faso, Senegal, and Sudan. Kenya stands out as a curious

outlier, with only 15.2% of unions ending in divorce after 20 years compared to most of its neighbors whose probability of divorce exceed 30%.

(insert Figure 1 about here)

Trends in Divorce

To investigate whether divorce has risen, fallen or remained the same over time (Question 2), we presents trends in divorce over different round of DHSs for seventeen countries by time since first union in Figure 2. Contrary to our expectations and Goode's predictions, we find no evidence of a clear and consistent upward trend in divorce in any country. In fact, in six countries (Benin, Ghana, Liberia, Niger, Madagascar, and Malawi), divorce appears to be decreasing over time. In Benin, 25.5% of unions ended in divorce within 20 years in 1996. By 2001, this percentage had fallen to 14.3%. In Ghana, comparable percentages fell from 42.5% in 1988 to 33.2% in 2008. In Niger, the percentage of divorced women dropped by more than 10 percentage points over the 20 year span from 1992 to 2012. Senegal exhibits a modest level of decline. Another six countries (Burkina Faso, Cameroon, Kenya, Tanzania, Uganda, and Zimbabwe) show very little change across the DHS rounds as does Nigeria with the exception of the DHS conducted in 2003. Cote d'Ivoire, Mali and Rwanda reveal substantial variation, but not in a consistent direction.

(Insert Figure 2 about here)

While these trends over time are interesting, it is also worthy to notice that each country displays its own distinctive divorce profile that remains largely consistent despite changing levels of divorce in some countries. In most countries, the shape of the divorce curve follows a log-function with steep increases in divorce during the first 20 years of marriage after which divorce levels plateau. For some countries, such as Burkina Faso, Cameroon, Nigeria, and Zimbabwe, the point of inflection is earlier, indicating that divorce rates are dominated by short-term unions. Ghana and, to a lesser extent, Senegal prove to be the exception to this pattern exhibiting more linear increases in divorce as the years since first union increase, where the risk of divorce is equally spread across the life course. Both Kenya and Mali show curiously low and flat rates of divorce, suggesting that unions are ended very early (within the first five years) or not at all. There are also a few erratic lines, where the divorce curve from particular years does not conform to the country's overall pattern (i.e. Cote d'Ivoire 1999, Nigeria 2003), but most countries display reasonably consistent divorce profiles over time.

To further investigate whether these unexpected trends in divorce may be driven by our assumptions about prior exposure to divorce and rates of remarriage embedded in Equation (1), we also examine trends in overall union dissolution and in widowhood separately. Our figures for overall union dissolution (results not shown) look similar to Figure 2, which is not surprising since the majority of unions end in divorce. In our separate analyses of trends in widowhood (see Appendix 2), we find the expected widowhood profile. Widowhood is relatively uncommon early in unions and starts to escalate after about 15 years. Across these 17 countries, widowhood rates show much less volatility than divorce rates over time. One notable exception is Zimbabwe, where widowhood rose sharply between 1988 and 2006 followed by a small decline in 2011.

This patterns mirrors trends in Zimbabwe's life expectancy which plunged from the early 1990s to the early 2000s, but has been improving over the last five years. Rwanda also shows considerable volatility since the early 1990s reflecting the country's civil strife and subsequent displacement of much of its population. There are also small, but appreciable, declines in widowhood in Benin, Burkina Faso, and Senegal. Overall, however, changes in widowhood rates contribute little to overall declines in union instability.

Country-level Correlates of Divorce

These findings raise puzzling questions about what might explain this significant variation in divorce across sub-Saharan Africa and declining rates of divorce over time found in several countries. To answer our third research question, we assess the extent to which socioeconomic factors associated with industrialization such as urbanization, women's empowerment, and marital practices, may account for variation in divorce seen across sub-Saharan Africa and over time.

Results from our random effects models show that urbanization is strongly positively correlated with divorce (Table 3). For example, if 20% of one country's population and 30% of another country's population lived in urban areas (a 10 percentage point difference), we would expect that the percent of unions ending in divorce would be almost 2 percentage points higher in the country that was more urbanized. In contrast, in countries where the gap in women's secondary education was 10 percentage points, the country with high levels of schooling would have, on average, 1.3 percentage points lower probability of divorce. Rising rates of monogamous unions

(i.e. declining rates of polygynous unions) is associated with more divorce, although this relationship is only significant at the 10% level. Our most striking finding is with respect to women's medium age at first marriage. In countries where women marry on average 5 years later, their expected probability of divorce falls by 9.5 percentage points. We note that the correlation coefficient (rho) is relatively high indicating that the majority of the variation stems from between country (rather than within country) variation. While these cross-country comparisons are interesting, they run the risk of tempting us to do what Thornton (2001) describes as "reading history sideways." Cross-country analyses are helpful in understanding variation among countries, but provide little insight into trends within countries and, hence, for making predictions about future changes in family dynamics.

(insert Table 3 about here)

To better assess the correlates of changes in divorce over time within countries, we turn to our fixed effects model. These results are broadly consistent with our random effects models, but provide additional insights. The magnitude of the positive relationship between urbanization and divorce is about the same. A 10 percentage point increase in the population living in urban areas corresponds to a rise in divorce of about 1.5 percentage points. The relationship between monogamous unions and divorce disappears, while the association between women's age at first union and divorce is stronger. In our fixed effects model, an increase in the medium age at first marriage of 5 years corresponds to a 12 percentage point decline in the probability of divorce. Women's educational attainment and employment act in opposite directions, with higher levels of female employment being positively associated with divorce and greater female education

having a negative correlation ($p<=.10$).

These regressions, regrettably, do not include an indicator for the percentage of matrilineal ethnic groups found within each country. Nonetheless, because previous research at the individual-level indicates that matrilineal ethnic groups have significantly higher divorce rates than patrilineal groups and because Goode (1963) prediction that industrialization will impact matrilineal and patrilineal groups differently, we assess differences in divorce trends between the matrilineal Akan ethnic groups and the patrilineal non-Akan ethnic groups in Ghana in Figure 3. Consistent with previous literature, we find strong evidence that divorce is higher among the matrilineal Akan. However, contrary to Goode's prediction, divorce appears to be declining in both matrilineal and patrilineal ethnic groups in Ghana. This rate of decline is more gradual among the matrilineal Akan, while the patrilineal non-Akan ethnic groups experience a sharp drop between 1998 and 2003. Nonetheless, the shape of the divorce curves by time since first union is similar. In fact, the curve for the Akan in 2003 is nearly identical to that of the non-Akan in 1988. Thus, weakening of kinship bonds in stable, high-divorce matrilineal groups alone is not sufficient to explain declines in divorce over time in Ghana.

(insert Figure 3 about here)

Discussion and Conclusions

These analyses make three original contributions to our understanding of family dynamics in sub-Saharan Africa. First, we provide the first systematic estimates of divorce across 33 countries in sub-Saharan Africa. We show that divorce is common in sub-Saharan Africa. In

more than two-thirds of the countries more than 20% of first unions in end in divorce within 20 years. And, divorce, not widowhood, is the primary driver of union dissolution. Thus, we argue that divorce as an important driver of family instability in sub-Saharan Africa desires greater recognition and further research.

Nonetheless, although we draw on the best available data, these data have several limitations. Thus, it is important to assess the accuracy of these estimates. Most importantly because we are using cross-sectional data, we must rely on retrospective data and invoke assumptions about stationary populations. These assumptions are especially problematic in countries such as Benin, Ghana, and Niger where we show sizeable declines in divorce over time. In these countries, one would be potentially overestimating the risk of divorce by assuming that a woman entering into marriage today would experience the same levels of divorce as reported in the most recent DHS. We also had to make assumptions about the probability that a previous union ended in divorce if the woman had remarried. Although we find no evidence that these assumptions biased our estimates of divorce 15-19 years after first union, it could have more of an influence later (for example, 50 years after first union), when widowhood is more common. The best way to overcome these limitations would be to have comprehensive vital registration systems of union status transitions or nationally representative longitudinal studies which collected detailed information on transitions into and out of unions. In the absence of such data, the inclusion of two questions 1) “when did your first union end?” and 2) “how did your first union end?” into standard cross-sectional studies such as the DHS would greatly improve the reliability of estimates of divorce.

Second, we show that contrary to on-going references in both the media and academic papers to the rising rates of divorce across the sub-continent, divorce is not increasing in sub-Saharan Africa. Indeed, in over 40% of the countries we examined divorce appears to be declining and in an additional 35% we find remarkable stability. Although this finding runs counter to wide-spread beliefs, we note that perceptions of divorce in the absence of data are often inaccurate. In the U.S., for example, a large proportion of the public believes that divorce rates continue to climb, despite numerous studies documenting its decline over the last quarter century (Raley and Bumpass 2003). In many ways, divorce trends in sub-Saharan Africa over the last 20 years more closely resemble these recent trends in the U.S., than the sharply rising rates of divorce observed in the U.S. from 1950 to the mid-1980s (Biblarz and Raftery 1999).

Whether these trends in divorce in sub-Saharan Africa will continue in the future is difficult to predict. Will they continue to fall in the countries where we have seen a downward pattern or will they soon begin to rise, as Goode (1963, 1993) predicts, when the countervailing forces of industrialization start to dominate? What will happen in countries with currently stable divorce patterns? Will they remain unchanged as women gain more education, kinship bonds weaken, and men and women alike are exposed to greater earning opportunities and independence? Or will they show patterns that more closely resemble those of Asia or the West? Answering these questions is beyond the scope of our paper and it is important to emphasize that our data cover a maximum of 23 years. This timeframe may be too short to detect significant and sustained changes in divorce, which may only emerge over a longer time period.

In addition, our conclusions about trends in divorce over time rely on not only the consistency of

the wording of questions over different phases of the DHS, but also on respondents' perceptions about what constitutes a union formation or disruption. Fortunately, the DHSs asked nearly identical questions across all phases of the survey pertaining to current union status, age at first union, and total number of unions. Moreover, although there were slight changes in the order of questions between DHS phases, we were not able to detect any systematic differences in responses to our key questions between these DHS rounds. Of more concern is that the meaning of union formation and union dissolution may have changed over time, especially for unions that are not recognized as formal marriages. For example, in the past, cohabitation may have captured primarily informal marriages that were not marked by traditional ceremonies, whereas today they may include more casual partnerships that bear little resemblance to marriage. To the extent that these casual forms of cohabitation are less enduring, we would expect to see rates of union dissolution increase, contrary to our main findings.

Third, our country-level analyses provide new insights into the complex relationship between divorce and industrialization. Cross-sectional data from a relatively small sample of countries is generally not suited for causal interpretation. Nonetheless, we offer some tentative evidence to support theoretical arguments that industrialization, as measured by urbanization and women's employment, are associated with higher levels of divorce. However, contrary to both Goode and Takayi and Broughton's (2006) contention that increasing women's autonomy will drive up divorce, we find that higher levels of female education are actually associated with lower levels of divorce. With respect to Goode's (1963; 1993) additional hypothesis that divorce will decline in industrializing countries with high stable divorce levels with cultural practices that are conducive to union instability, we find limited support. Divorce fell in some stable high-divorce

countries such as Benin, Ghana, Niger, and Malawi, but not in others such as Cameroon, Tanzania, and Uganda. Moreover, divorce declined in both patrilineal and matrilineal ethnic groups in Ghana.

Overall, our findings are most supportive of Jones's (1997) argument that rising age at first marriage, which signifies both greater maturity and spousal self-selection into more compatible unions, leads to greater union stability. Compared to all other regions, sub-Saharan Africa has experienced the largest decline in the proportion of married 15-19 year old girls between 1970 and 2000 (Mensch, Singh, and Casterline 2005). Such strong trends in age at first union have implications for women's fertility, educational attainment, and gender relations; yet potentially one of the most important-- and hitherto ignored—consequences will be on the ability of women to form lasting partnerships.

Greater union stability is generally good news for children's well-being (Amato 2000, Chae 2011, Clark and Hamplová 2013, Thiombiano et al. 2013). However, our findings of steady or moderate declines in divorce in most countries should not obscure the reality that unions are exceptionally fragile in the majority of countries in sub-Saharan Africa. We also find that more than one-third of unions will end before their 20th anniversary and more than 40% of women will have experienced a union dissolution before their 50th birthday. Given the high fertility rates in Africa, we estimate that over 85% of women will have at least one child under the age of 15 at the time of union dissolution (results not shown). These statistics imply a large number of single mothers. While traditionally kin have been nearby to compensate for the absence of fathers, the weakening of kinship ties through urbanization and migration leaves more single mothers with

less support. In 1998, South Africa implemented Maintenance Act No. 99, which required parents to provide payment for the maintenance of all their biological children that is consistent with the standard of living of the noncustodial parent. Last year, Kenya introduced legislation mandating parental care and protection with equal responsibility of the mother and father irrespective of their marital status (The Constitution of Kenya, Article 53 (1) (e)). Other countries may follow suit. Requiring support from noncustodial parents could minimize the negative effects of divorce, but it remains unclear whether such policies will be widely accepted and enforced. Assessing the impact of such legislation will require significantly improved data on union instability in nationally representative surveys.

While such data may be cumbersome and costly to collect, they would also enhance our understanding of the implications of divorce for mothers' and fathers' well-being, intergenerational transmission of poverty, and the perpetuation of gender inequality. In addition, they would be vital to assessing how marital stability change in response to economic growth, increases in women's autonomy, lower fertility, weakening kinship ties, and greater global connectivity. Although the causes and consequences of divorce have been studied extensively in Western countries, we cannot assume that these processes will be similar in low-income countries. The rich diversity of marital practices coupled with the rapidly changing social, economic, and cultural landscape of sub-Saharan Africa, offers researchers a unique opportunity to better understand the complex dynamics of human partnering and will likely yield some surprising findings.

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Table 1. ***Descriptive Statistics of Counry-Level Measures of Divorce and Correlates of Divorce from All Available DHSs in Sub-Saharan Africa.***

	Mean	Std. Dev.	Min	Max	n
Divorced within 20 years	26.6	10.2	6.9	48.5	106
Age 1st Marriage (medium)	18.5	2.1	14.9	28.2	107
In Monogamous Union (%)	71.4	12.7	45.3	96.6	100
Urbanized (%)	32.7	14.8	3.9	88.6	106
Women Ever in Secondary School (%)	24.9	18.7	2.2	74.4	107
Women Currently Employed (%)	57.4	18.1	5.1	92.9	105

Table 2. ***Percentage of First Unions That Have Dissolved, Ended Through Divorce, or Ended Through Widowhood 15-19 Years Since First Union Using Most Recent DHS Data from 33 Countries in Sub-Saharan Africa.***

		15-19 Years Since First Union		
	Most Recent Survey Year	% Dissoloved	% Divorced	% Widowed
Benin*	2011-12	17.88	14.25	3.63
Burkina Faso*	2010	17.22	11.00	6.22
Burundi	2010	29.95	17.37	12.58
Cameroon*	2011	37.72	29.36	8.36
Central African Republic	1994-95	49.97	44.14	5.83
Chad	2004	29.86	24.01	5.85
Congo(Brazzaville)	2011-12	51.02	47.10	3.92
Congo (DRC)	2013	34.41	28.76	5.65
Cote d'Ivoire*	2011-12	29.27	22.32	6.95
Ethiopia	2011	39.62	30.57	9.05
Gabon	2012	42.85	39.08	3.77
Ghana*	2008	39.97	33.22	6.75
Guinea	2012	21.96	14.62	7.34
Kenya*	2008-09	24.22	15.18	9.04
Lesotho	2009	28.14	11.95	16.19
Liberia*	2013	51.58	43.06	8.52
Madagascar*	2008-09	39.20	35.12	4.08
Malawi*	2010	43.78	33.77	10.01
Mali*	2012-13	9.63	6.87	2.76
Mozambique	2011	38.80	30.73	8.07
Namibia	2006-07	34.76	23.00	11.76
Niger*	2012	24.96	20.60	4.36
Nigeria*	2013	20.52	11.83	8.69
Rwanda*	2010	37.22	21.18	16.04
Senegal*	2010-11	23.35	19.70	3.65
Sierra Leone	2008	35.89	25.23	10.66
South Africa	1998	26.92	20.21	6.71
Swaziland	2006-07	32.73	13.24	19.49
Tanzania*	2010	36.97	30.04	6.93
Togo	1998	36.86	28.01	8.85
Uganda*	2011	37.52	30.28	7.24
Zambia	2007	43.23	29.84	13.39
Zimbabwe*	2010-11	35.33	20.51	14.82
Average		33.43	25.03	8.40

* indicates countries included in trend analyses

Table 3. Correlates of the Percentage of First Unions Ending in Divorce Within 15-19 Years of First Union (Country-Level Random and Fixed Effects Models)

	Random Effects			Fixed Effects		
	Coef.	**Std. Err.**	**Sig.**	**Coef.**	**Std. Err.**	**Sig.**
Age 1st Marriage (medium)	-1.89	0.61	**	-2.43	0.79	**
In Monogamous Union (%)	0.19	0.11	†	-0.04	0.17	
Urbanized (%)	0.17	0.06	**	0.15	0.07	*
Women Ever in Secondary School (%)	-0.13	0.06	*	-0.12	0.06	†
Women Currently Employed (%)	0.04	0.03		0.06	0.03	*
Constant	44.93	11.00	***	68.77	12.19	***
rho	0.87					
Wald chi2(5)	31.29		***			
F(5,61)				9.24		***
n	98			95		
groups	32			29		

Lesotho is excluded due to missing values for polygyny.

Significance: †p<0.10, *p<0.05,**p<0.01, ***p<0.001.

Figure 1. Percentage of First Unions that End in Divorce Within 20 Years

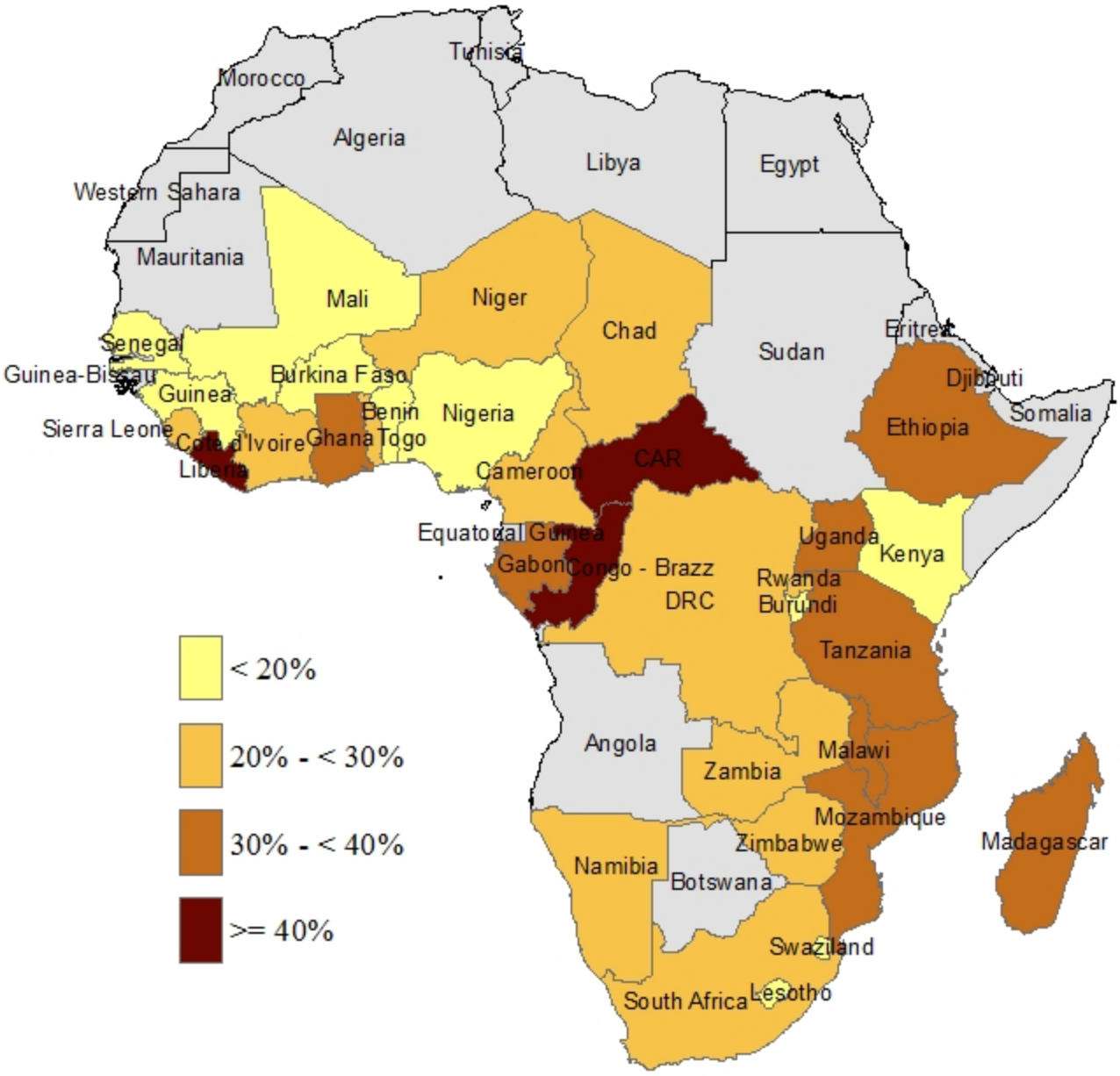
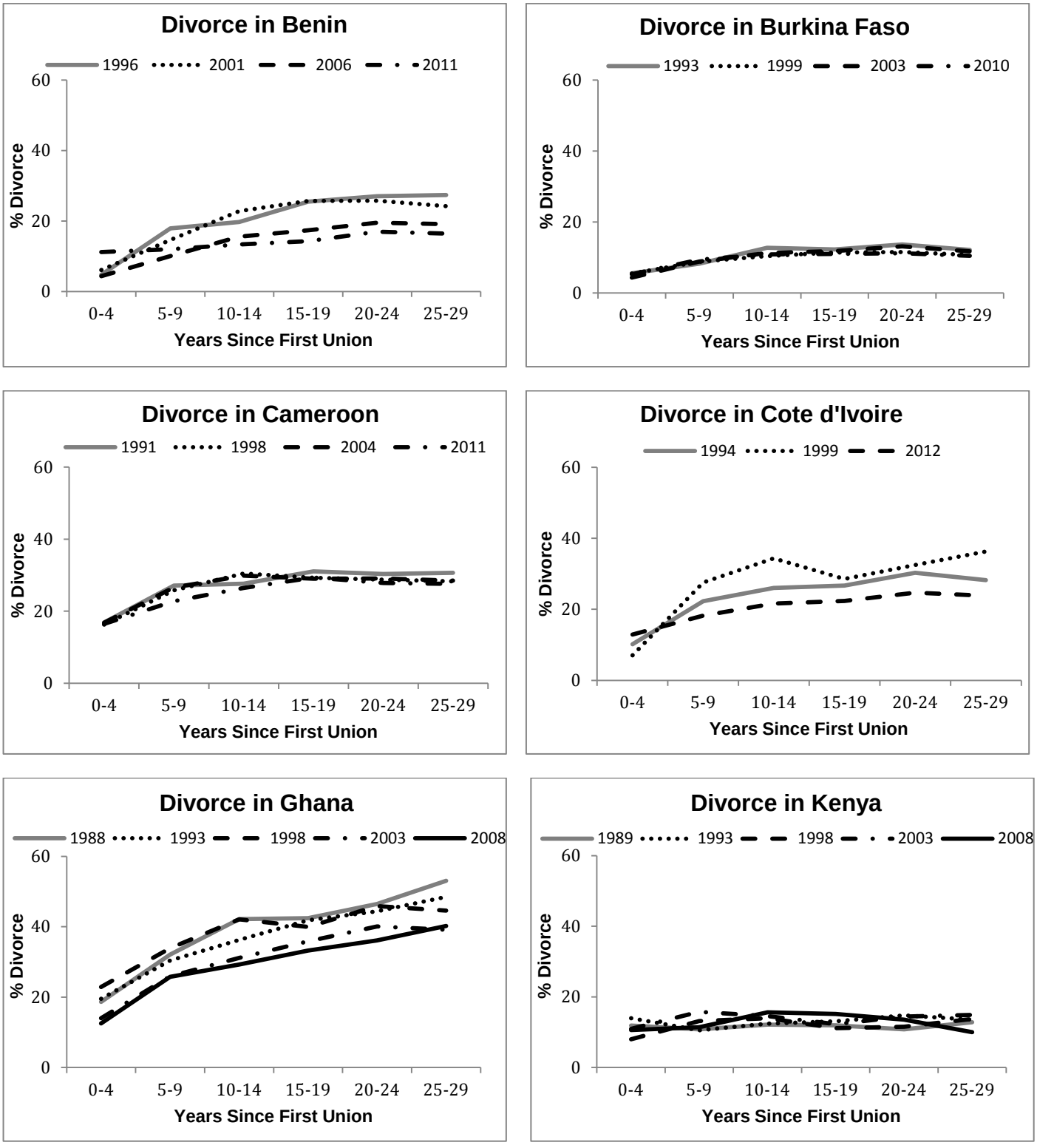
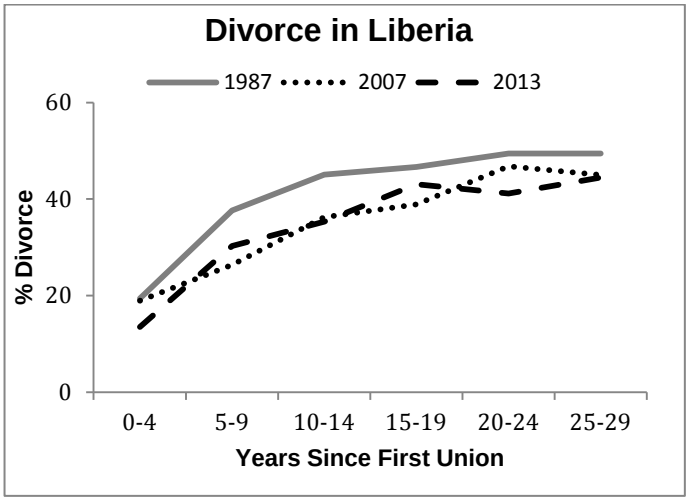
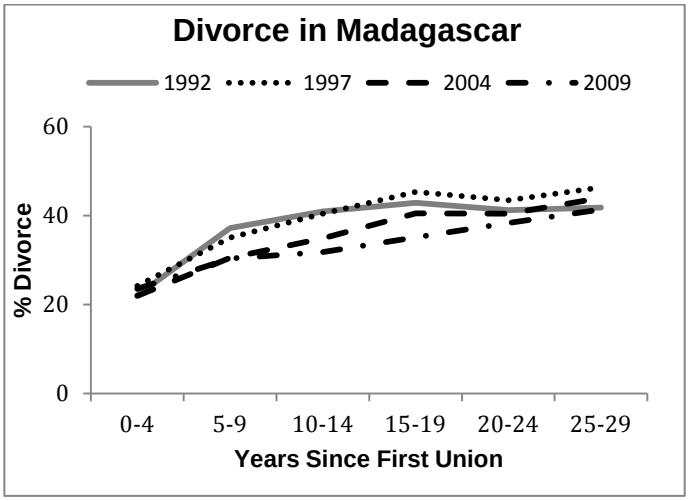
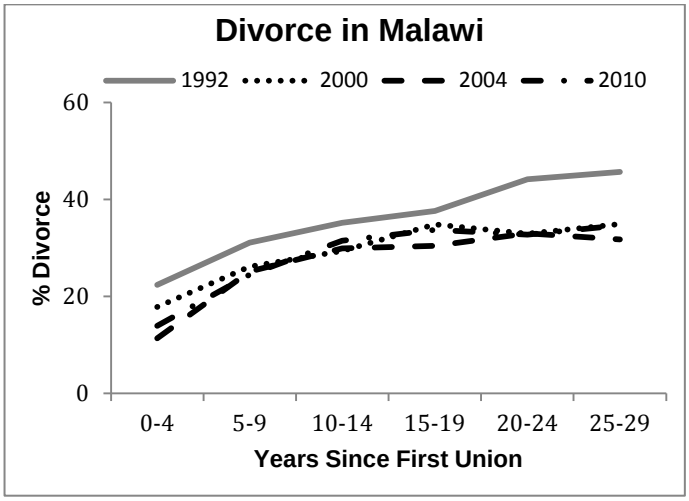


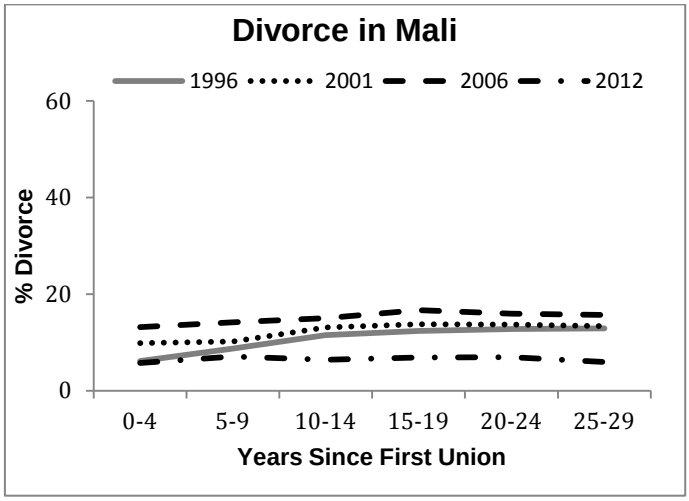
Figure 2. Percentage of Unions Ending in Divorce by Time Since First Union and Year of DHS in 17 Countries.

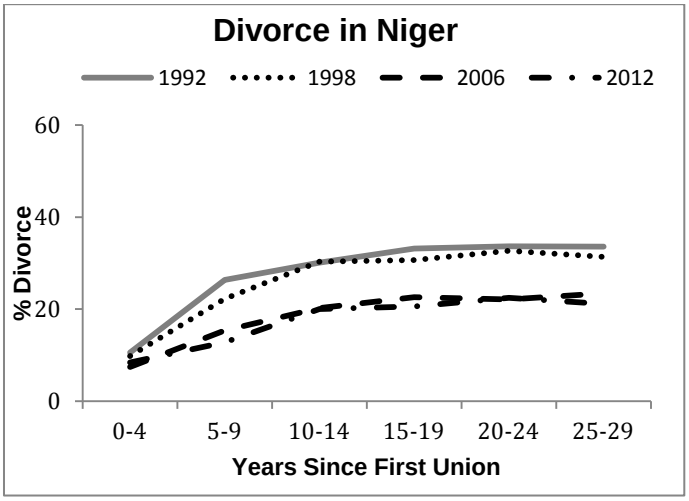


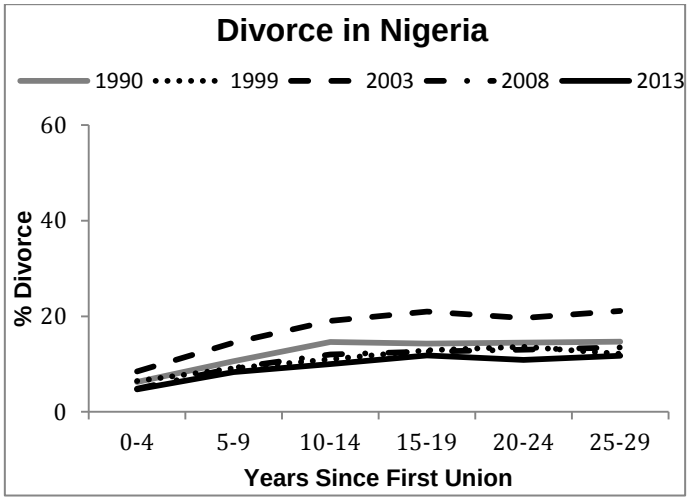

Divorce in Liberia
1987
2007
2013
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

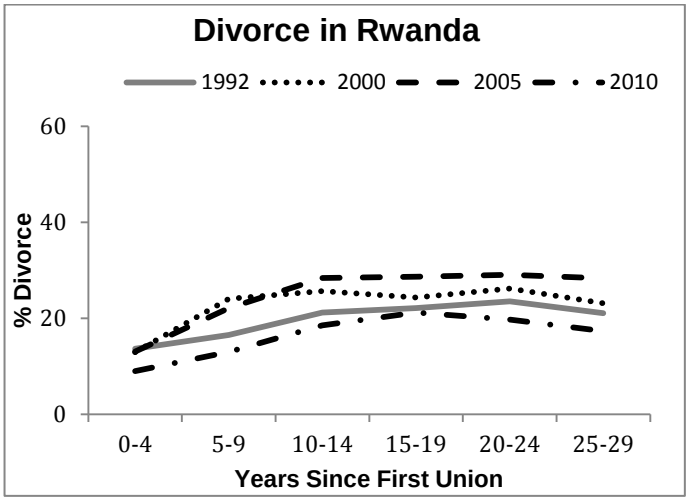

Divorce in Madagascar
1992
1997
2004
2009
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Divorce in Malawi
1992
2000
2004
2010
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Divorce in Mali
1996
2001
2006
2012
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Divorce in Niger
1992
1998
2006
2012
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Divorce in Nigeria
1990
1999
2003
2008
2013
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union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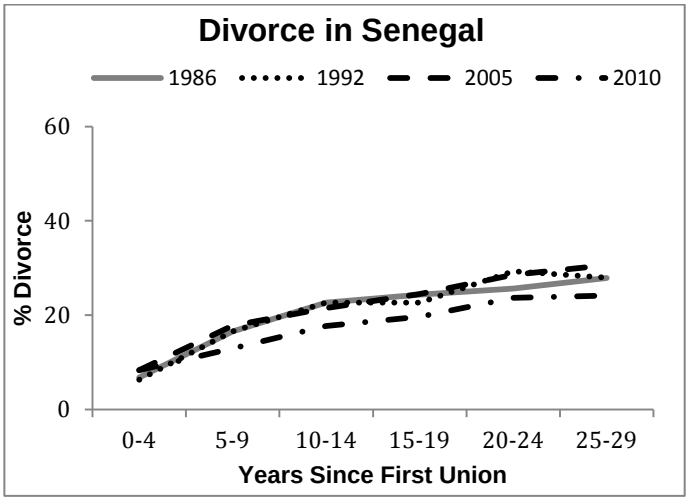
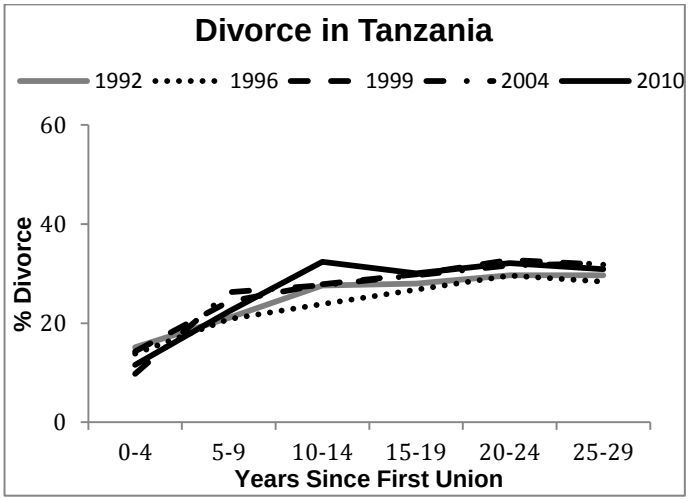
1992
2000
2005
2010
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Divorce in Senegal
1986
1992
2005
2010
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union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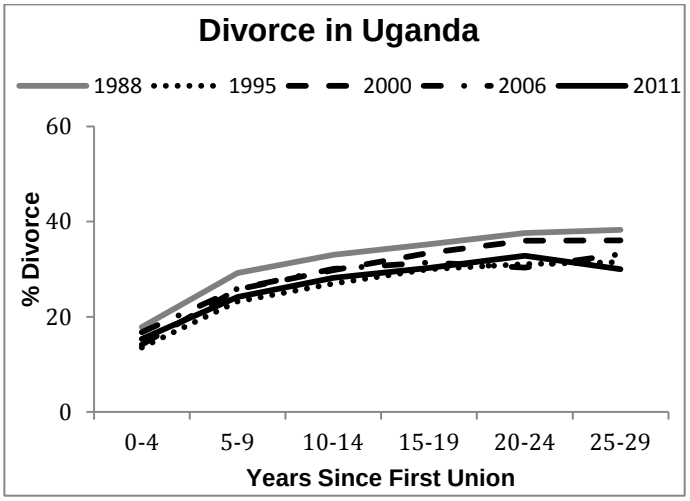
1992
1996
1999
2004
2010
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Divorce in Uganda
1988
1995
2000
2006
2011
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

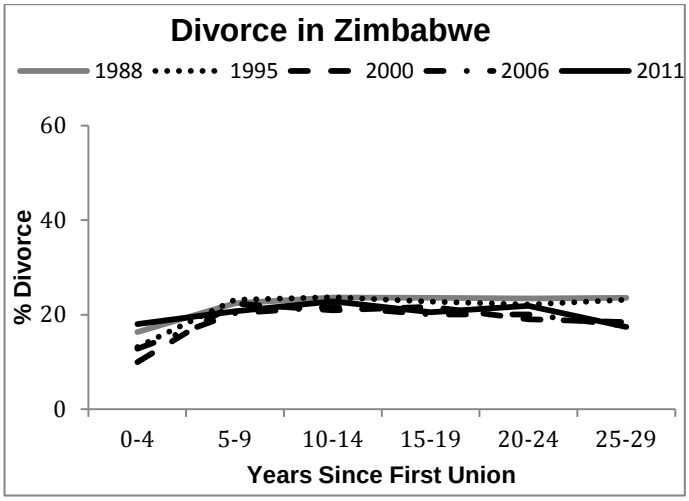
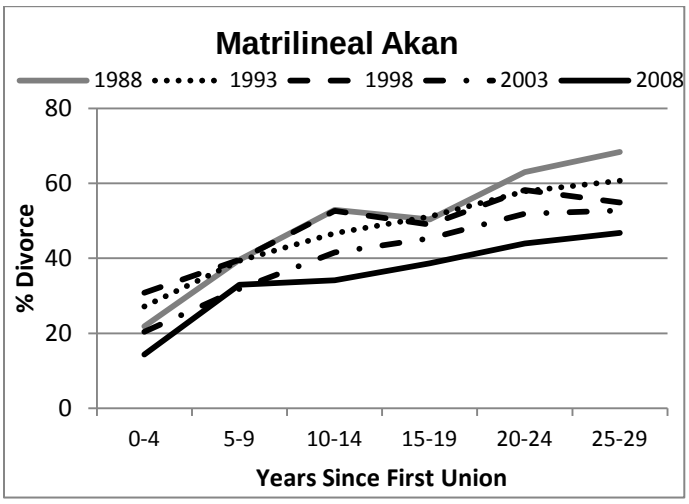
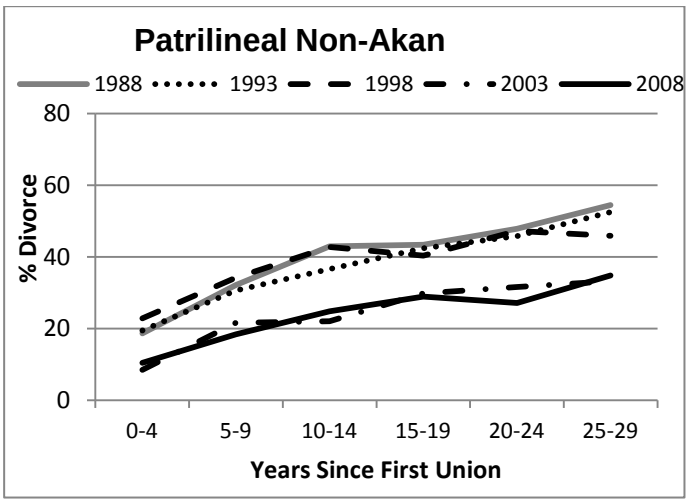

Divorce in Zimbabwe
1988
1995
2000
2006
2011
60
40
20
0
% Divorce
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

Figure 3. Percentage of Unions Ending in Divorce among Matrilineal and Patrilineal Groups in Ghana.



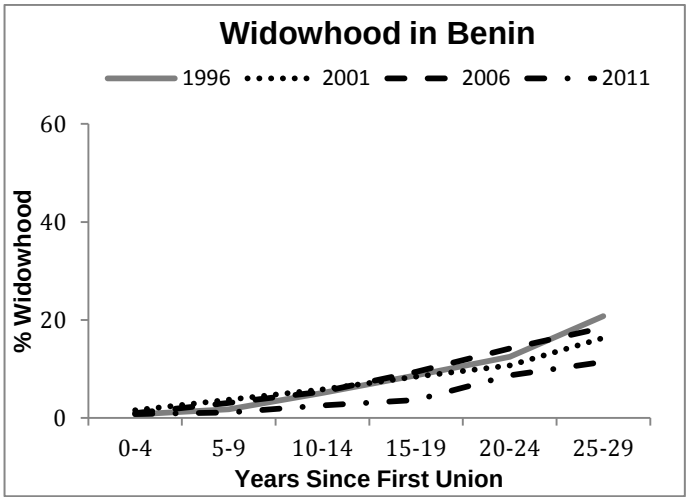


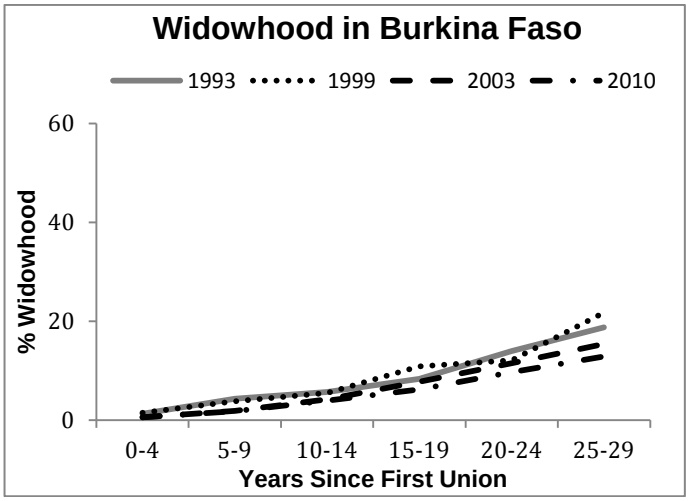
Appendix 1. ***Percentage of Women Whose First Unions Dissolved, Ended Through Divorce, or Ended Through Widowhood by Age 40-45 Using Most Recent DHS Data from 33 Countries in Sub-Saharan Africa.***

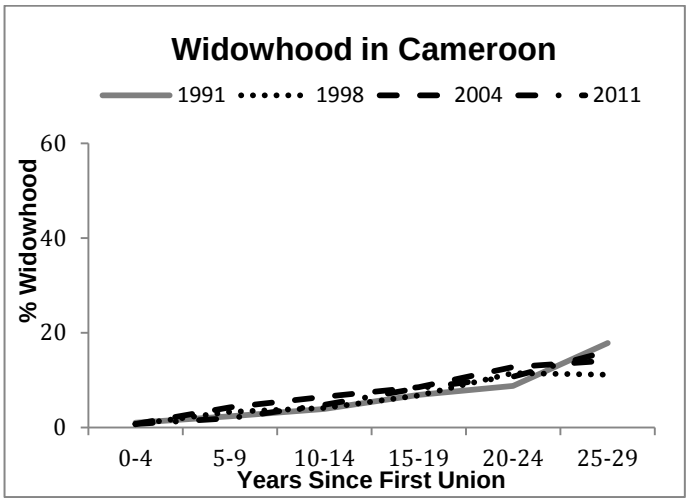
		Age (40-44 years)			Sullivan Method Age (40-44 years)		
	Most Recent Survey Year	% Dissoloved	% Divorced	% Widowed	% Dissoloved	% Divorced	% Widowed
Benin*	2011-12	27.25	17.90	9.35	24.45	16.06	8.39
Burkina Faso*	2010	21.90	10.60	11.30	19.43	9.40	10.03
Burundi	2010	30.67	13.76	16.91	26.31	11.81	14.50
Cameroon*	2011	40.15	27.23	12.92	33.21	22.52	10.68
Central African Republic	1994-95	56.25	46.16	10.09	44.47	36.49	7.98
Chad	2004	36.17	24.91	11.26	29.48	20.31	9.18
Congo(Brazzaville)	2011-12	51.93	45.21	6.72	45.10	39.26	5.84
Congo (DRC)	2013	39.65	29.83	9.82	33.61	25.28	8.33
Cote d'Ivoire*	2011-12	33.34	24.01	9.33	26.83	19.32	7.51
Ethiopia	2011	46.41	31.46	14.95	41.93	28.42	13.51
Gabon	2012	45.07	35.80	9.27	39.27	34.41	8.07
Ghana*	2008	45.65	35.56	10.09	41.39	32.24	9.15
Guinea	2012	28.09	15.64	12.45	24.69	13.74	10.94
Kenya*	2008-09	26.87	11.63	15.24	23.33	10.09	13.23
Lesotho	2009	29.66	10.86	18.80	21.32	7.80	13.51
Liberia*	2013	51.84	38.05	13.79	46.89	34.41	12.47
Madagascar*	2008-09	44.89	38.60	6.29	41.17	35.40	5.77
Malawi*	2010	50.69	34.57	16.12	42.17	28.76	13.41
Mali*	2012-13	11.67	5.92	5.75	10.22	5.18	5.04
Mozambique	2011	40.98	30.09	10.89	32.13	23.59	8.54
Namibia	2006-07	27.16	16.46	10.70	24.76	15.00	9.76
Niger*	2012	29.37	22.05	7.32	26.30	19.74	6.56
Nigeria*	2013	22.60	10.76	11.84	18.95	9.02	9.93
Rwanda*	2010	41.62	18.02	23.60	37.98	16.45	21.54
Senegal*	2010-11	30.54	23.12	7.42	28.22	21.37	6.85
Sierra Leone	2008	41.96	25.88	16.08	32.72	20.18	12.54
South Africa	1998	26.47	18.21	8.26	22.43	15.43	7.00
Swaziland	2006-07	27.89	9.31	18.58	21.06	7.03	14.03
Tanzania*	2010	39.31	28.83	10.48	33.66	24.69	8.97
Togo	1998	43.93	29.11	14.82	37.03	24.54	12.49
Uganda*	2011	45.32	31.41	13.91	37.29	25.85	11.44
Zambia	2007	48.10	29.00	19.10	39.58	23.87	15.72
Zimbabwe*	2010-11	42.77	19.43	23.34	36.08	16.40	19.69
Average		37.16	24.53	12.63	31.62	21.03	10.69

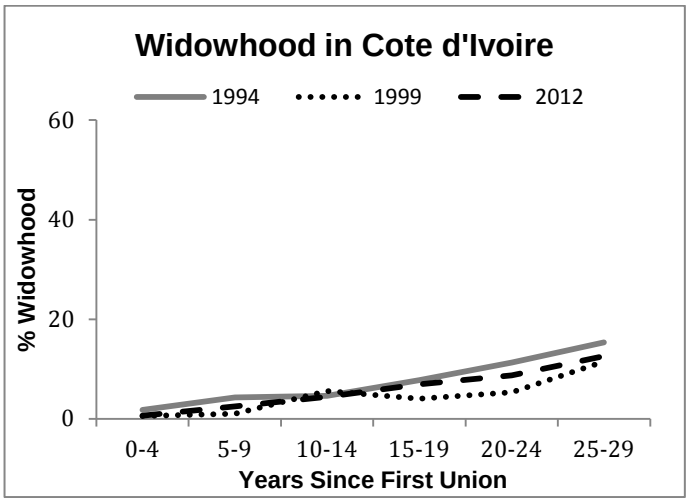
* indicates countries included in trend analyses

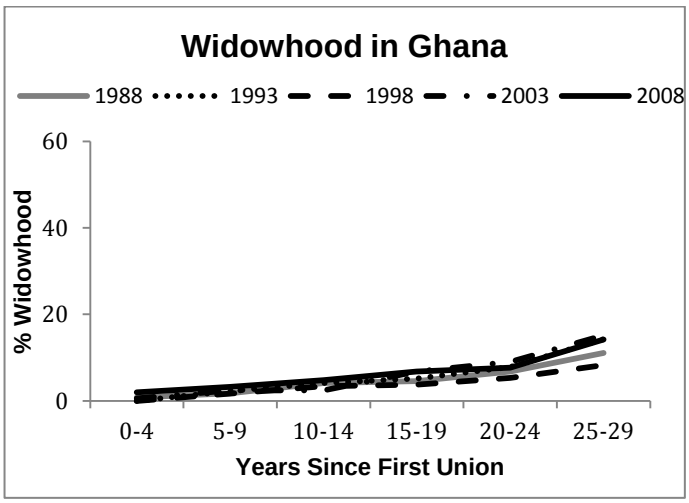
Appendix 2. Percentage of Unions Ending inWidowhood by Time Since First Union and Year of DHS in 17 Countries.

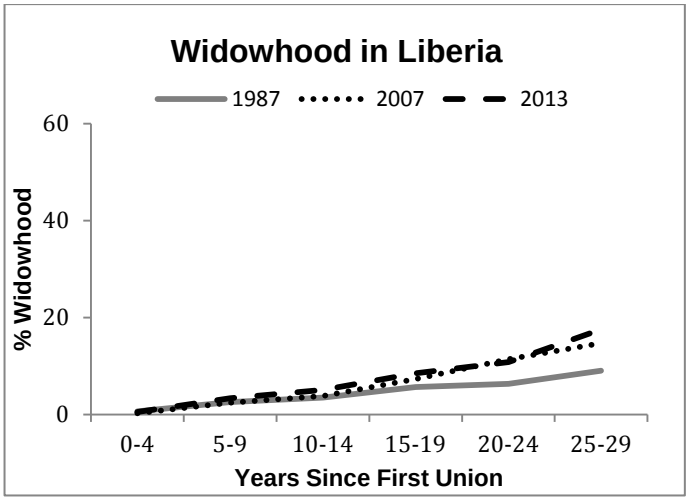


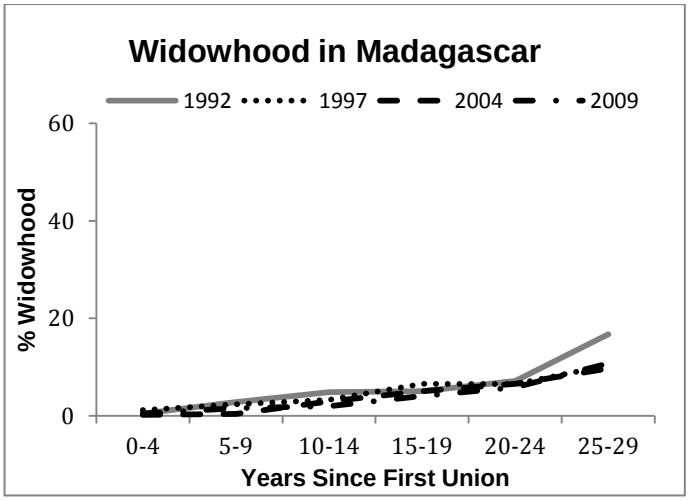


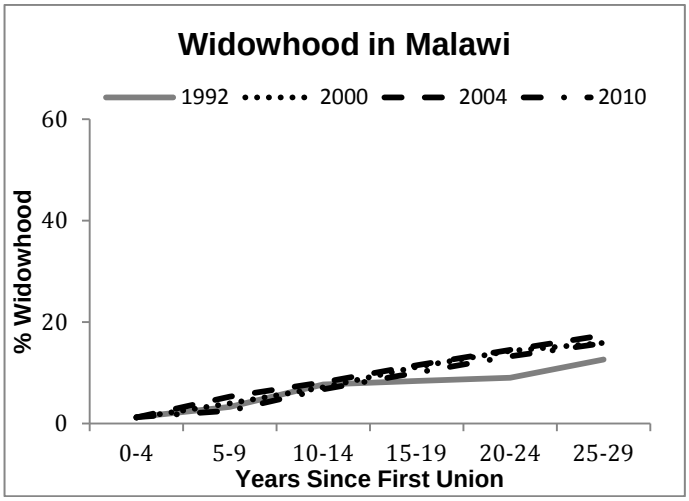


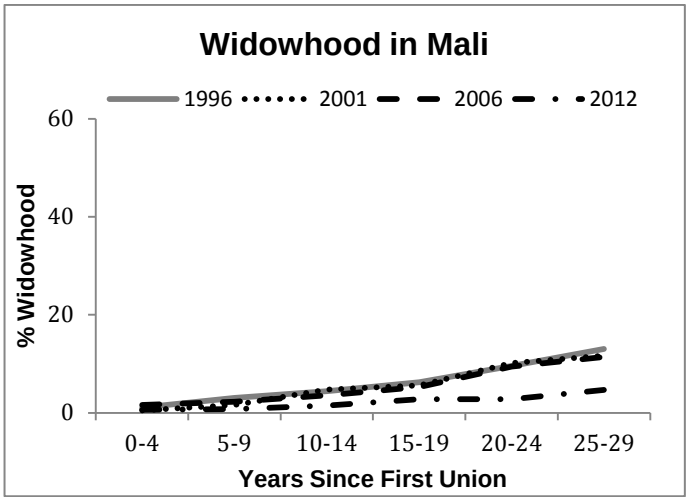


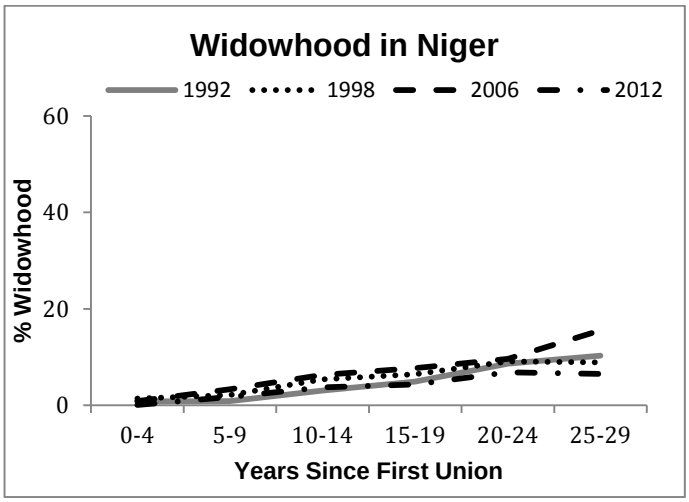


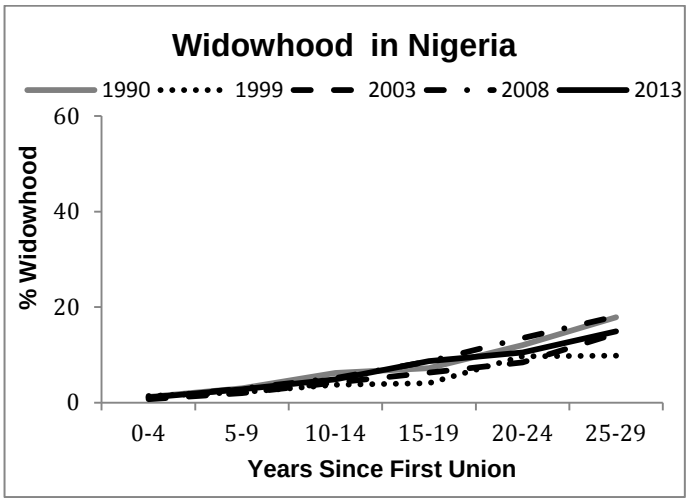

Widowhood in Liberia
1987
2007
2013
% Widowhood
0
20
40
60
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

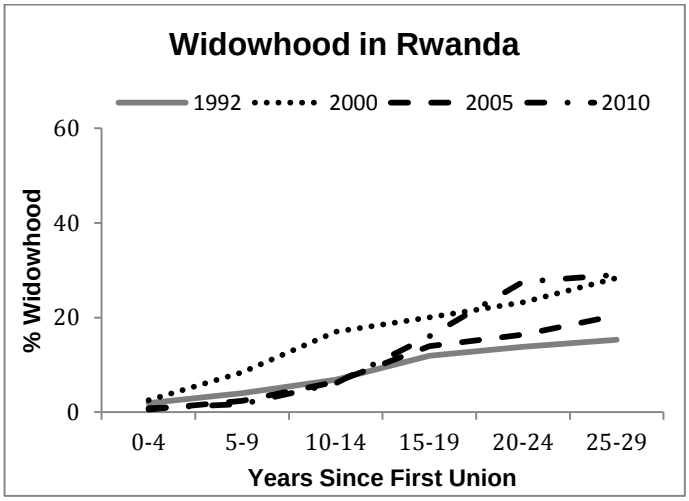

Widowhood in Madagascar
1992
1997
2004
2009
% Widowhood
0
20
40
60
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

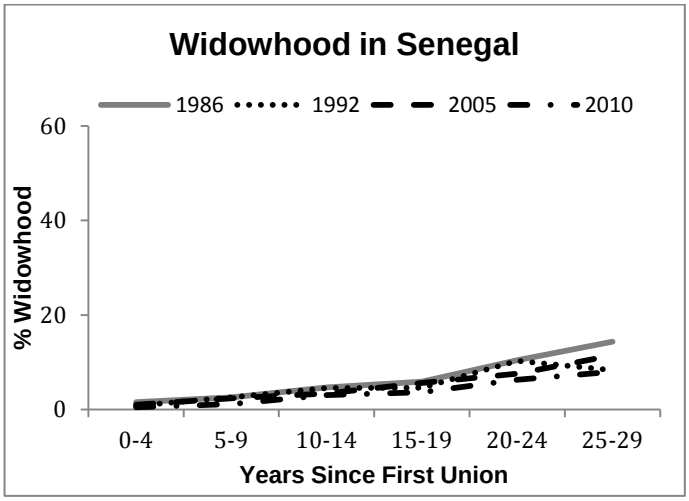

Widowhood in Malawi
1992
2000
2004
2010
% Widowhood
0
20
40
60
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

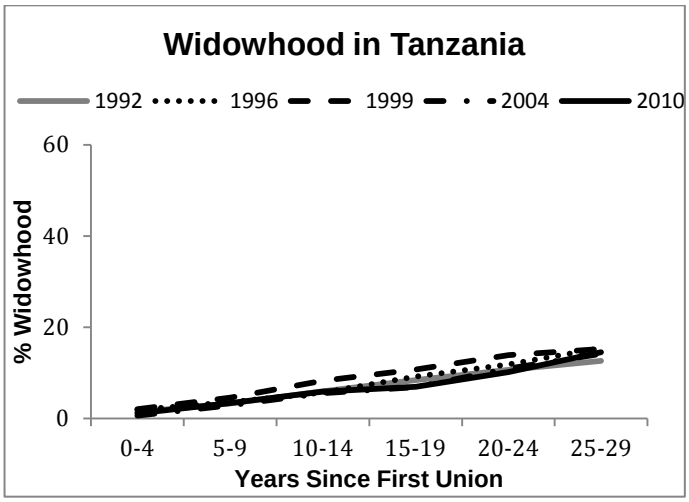

Widowhood in Mali
1996
2001
2006
2012
% Widowhood
0
20
40
60
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

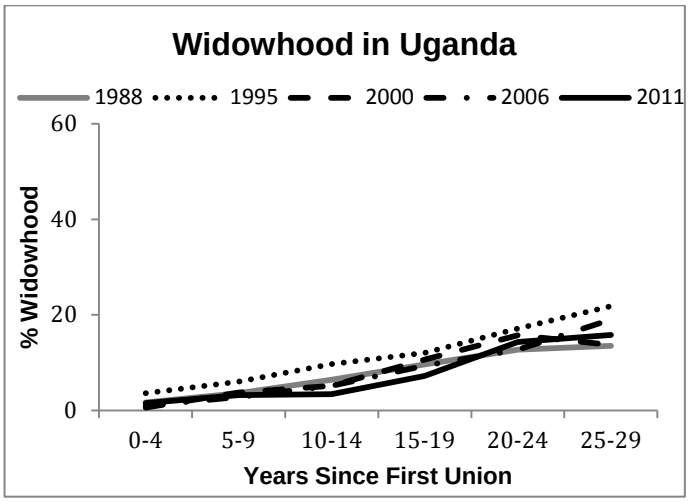

Widowhood in Niger
1992
1998
2006
2012
% Widowhood
0
20
40
60
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union

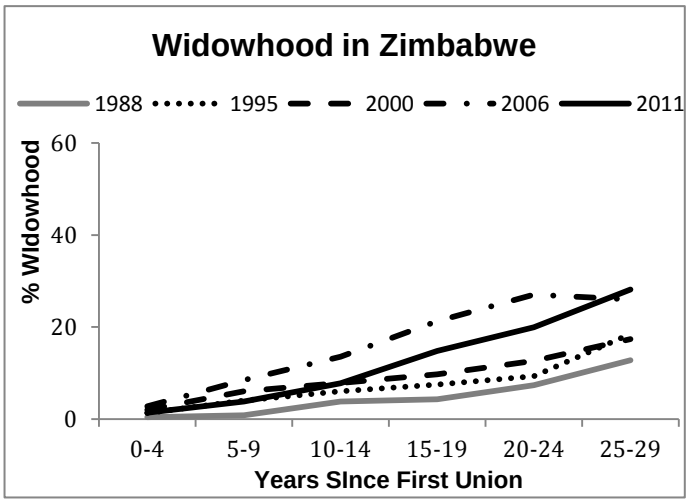

Widowhood in Nigeria
1990
1999
2003
2008
2013
% Widowhood
0
20
40
60
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Widowhood in Rwanda
1992
2000
2005
2010
60
40
20
0
% Widowhood
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Widowhood in Senegal
1986
1992
2005
2010
60
40
20
0
% Widowhood
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Widowhood in Tanzania
1992
1996
1999
2004
2010
60
40
20
0
% Widowhood
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union


Widowhood in Uganda
1988
1995
2000
2006
2011
60
40
20
0
% Widowhood
0-4
5-9
10-14
15-19
20-24
25-29
Years Since First Union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1995
2000
2006
2011
60
40
20
0
% WIdowhood
0-4
5-9
10-14
15-19
20-24
25-29
Years SInce First Union