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Polygynists and their Wives in Sub-Saharan Africa:

an analysis of five Demographic and Health Surveys[*]

(Short title: Polygynists and their Wives in Africa)

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ABSTRACT

Differential polygyny in Ghana, Kenya, Senegal, Uganda, and Zambia is investigated using individual-level Demographic and Health Surveys data. As well as contrasting polygynists' first wives with women in monogamous unions, the analysis distinguishes higher-order wives from first wives. This permits study of the determinants of the prevalence and intensity of polygyny respectively. Polygyny and other aspects of marriage interlock in very similar ways in all five countries. Individuals' experience of polygyny tends to reflect their luck in the marriage market rather than their socio-economic characteristics. While polygyny is less prevalent in urban areas, other socio-economic factors are important only in Kenya and Zambia, the two countries where less than 25 per cent of married women are in polygynous unions. The prevalence and intensity of polygyny are negatively associated. Thus, any drop in the prevalence of polygyny in Africa may be accompanied by a rise in the number of wives per polygynist.

INTRODUCTION

This paper seeks to identify characteristics that differentiate African couples in polygynous marriages from those in monogamous marriages. As precursor to this, it discusses several issues of method that arise in the study of the demography of polygyny and in the analysis of Demographic and Health Surveys (DHS) data on this subject. A central theme of the paper is that individual-level analyses of different types of marital union should distinguish polygynists' first-wives from their higher-order wives. Unlike many earlier enquiries in sub-Saharan Africa, the national surveys conducted by the DHS programme allow this. The analysis is based on five such surveys. The countries studied are Ghana, Kenya, Senegal, Uganda, and Zambia.

Africa is a diverse continent that is undergoing rapid change. Nevertheless, kinship, marriage, and the family in Africa tend to share features that distinguish them from equivalent institutions elsewhere. Polygyny lies at the heart of this cluster of interrelated practices that shape family life in sub-Saharan Africa (van de Walle 1985; Locoh 1988). Until recently, marriage was effectively universal in most of Africa. Thus, except where migration led to a very imbalanced sex ratio in the adult population, widespread polygynous marriage entailed early marriage of women but postponement of marriage for most men till well into their twenties (Goldman and Pebley 1989; Lesthaeghe *et al.* 1989). Because husbands are often much older than their wives in polygynous societies, widowhood of women is common. Moreover, polygyny is associated with high rates of divorce (Pison 1986). In most of Africa, however, divorced and widowed women remarry rapidly. This makes it possible for more men to become polygynists. Widespread polygyny also facilitates the maintenance of prolonged breast feeding and sexual abstinence post-partum. Thus, from the demographer's perspective, lengthy birth intervals are a further significant component of African reproductive regimes.

Much demographic research on polygyny has focused on its impact on fertility (for example, Bean and Minneau 1986; Garenne and van de Walle 1989; Pebley and Mbugua 1989; Sichona 1993). In many populations, women in polygynous unions have lower fertility than those in monogamous unions. However, this differential is usually small and sometimes non-existent (Pebley and Mbugua 1989). At the collective level, compensating effects on fertility exist in societies with polygynous marriage systems. In particular, because it is possible, and often expected, for divorcees and widows to find new husbands, women spend most of their fertile years in a marital union (Pison 1986). Thus, the net effect of polygyny is usually to increase fertility.

The demographic significance of polygyny extends beyond its direct impact on the proximate determinants of fertility. Pison (1986) emphasises the wide-ranging implications of the institution for social relationships between the sexes, generations, and kin. As it widens the age gap between men and their wives and children, polygyny alters the nature of relationships within the family and reinforces patriarchal authority. Polygynous marriage also leads to a proliferation of step-relatives, especially on the male side. Moreover, it increases the diversity of marital situations in society. Many men

progress from monogamous marriage to have two or more wives concurrently. As a counterpart, many women have two or more partners in succession.

DETERMINANTS OF POLYGYNY

Most research into the determinants of polygyny has focused on macro-level factors. Widespread polygyny is linked to the existence of kinship groups that share descent from a common ancestor (Romaniuc 1988). Polygyny has an economic rationale for the men who head these kin groups in those African societies where women undertake much of the agricultural labour (especially for subsistence crops) and where a large family provides both labour and physical security (Boserup 1970; Clignet 1970). If women engage in trade as well as farm, as is typical in West Africa, men's incentive to marry polygynously is strengthened (Lesthaeghe and Surkyn 1988). Polygyny is also found more often in combination with patrilineal than matrilineal kinship systems. Systems of descent via the female line usually involve uxorilocal residence on marriage. This feature of matriliny makes it difficult to maintain polygynous households unless men marry groups of sisters.

Polygynous marriage is uncommon in societies that lack any form of social stratification (Clignet 1970). It is far more common in societies with limited social stratification, such as those found in much of Africa, but is seldom found in highly stratified peasant societies with inherited access to land. Goody (1976) argues that this is because concern about social status was an incentive toward endogamous marriage and the endowment of daughters with dowries in peasant society in Europe and Asia. In contrast, in African family systems the older generation has been less concerned to marry their daughters well than in more stratified societies.

It has often been argued that the processes of social change occurring in Africa will lower the prevalence of polygyny. Goode (1970) expected that urbanization and industrialization would weaken extended family systems and encourage the worldwide emergence of conjugal families. Caldwell's (1976) wealth flows theory of fertility predicts the same development, although he places more emphasis on 'Westernization' as the crucial factor intervening between the development of a market economy and family change. Romaniuc (1988) argues that the attenuation of the widespread custom of prolonged post-partum abstinence in sub-Saharan Africa is removing an important justification for polygyny. Moreover, most Christian churches have been hostile to polygyny and this is reflected in the laws of some African countries. It has also been argued that the development of widespread schooling of girls in parts of Africa has tended to undermine plural marriage (Clignet 1970).

Lesthaeghe and his collaborators (1988, 1989) conducted a series of cross-sectional comparative analyses of polygyny in Africa that linked survey and census data with ethnographic data from Murdock's (1967) *Ethnographic Atlas*. Using a range of statistical methods, they confirmed that polygyny is more prevalent in patrilineal societies and societies in

which women's economic activities are important than in societies where descent is reckoned matrilineally or pastoralism is important. Polygyny is associated inversely with political complexity. It is also less prevalent among Muslim populations in the northern Sahel than further south. Most of these ethnic groups are stratified by caste and favour parallel cousin marriage rather than practise lineage exogamy. In general, however, Christian populations are less polygynous than Muslim ones, while ethnic groups that hold to traditional African belief systems are most polygynous. While polygyny is less prevalent in societies where more adult women are literate, this factor explains far less of the variation in polygyny than indicators of social organization.

The unit of analysis in Lesthaeghe *et al*.'s (1989) analysis is the ethnic group. Less research has been conducted into the individual-level demographic, economic, and cultural determinants of polygyny. The anthropological literature contains many suggestions as to how the characteristics of polygynists and their wives differ from those of men and women in monogamous unions. Demographic analyses, however, have usually focused on single populations or been limited to the description of univariate differentials (for example, Marindo-Ranganai 1994).

Men can become polygynists only after contracting a monogamous marriage. Thus, unless the incidence of polygynous marriage has risen rapidly over time, one would expect the prevalence of polygyny to increase with marital duration (and therefore age) among both men and women. Once one moves beyond this mechanical effect, personal characteristics can affect the type of union that men and women contract by modifying either their preferences or their ability to realise those preferences. These two pathways of influence usually operate jointly. For example, a woman who has achieved a high level of education, and remained single into her twenties to do so, might have acquired a strong preference for monogamous marriage. On the other hand, her age and perhaps her education could make her a less attractive prospective wife for single men than other women. Thus, she may be unable to realise her preference and eventually accept a proposal from a polygynist. The net outcome of such countervailing forces could differ between particular marriage markets. Moreover, observation of effects in one direction does not imply that no countervailing forces exist.

As young, single women tend to be more attractive brides, divorcees, widows, and women who remain single till an older age than usual are relatively likely to become a higher-order wife, not a man's first partner. Women who prove unable to bear children may be divorced by their husband. Alternatively, he may take an additional wife. Thus, infertile women may be most likely to end up as first wives in polygynous unions and least likely to be monogamously married.

Economic determinants of differential polygyny operate in the context of the payment of bridewealth to establish marriages. Other things being equal, relatively wealthy men will be more able to contract polygynous marriages than poorer men. To the extent, however, that polygyny is valued because of the access it gives men and their kin groups to women's and children's labour, economic success may be a consequence as well as a cause of polygyny (Mair 1971). This

line of argument suggests that polygyny should be more common in farming families than among those who work in non-agricultural occupations.

The most powerful cultural influences on preferences about marriage in Africa are likely to be systems of religious belief and Westernization of individuals' world views and aspirations. In general, Christian churches oppose polygyny; Islam sanctions polygyny; and those with traditional African religious beliefs seem likely to be committed to the institution. Schooling is widely argued to be the most powerful agent of Westernization operating in Africa and Asia (for example, Caldwell 1980). This suggests that educated men and women may be more likely to be in monogamous unions than the uneducated. In addition, exposure to the mass media and to Western consumer goods are important agents of Westernization. Both for this reason and because of the high cost of housing, one would expect polygyny to be less prevalent in urban areas than rural areas.

METHODS OF ANALYSIS

Analyses of the micro-level determinants of polygyny need to take into account that, while survey data are usually collected from individuals, it is the marital union that is the appropriate unit of analysis. There are at least two partners in every marriage and three or more in a polygynous marriage. Moreover, every polygynous union was once a monogamous union. Thus, it is important to separate the issue of which monogamous couples acquire further wives from the issue of what differentiates women who marry into existing unions from women who marry single men.

Many studies of the characteristics of polygynous women have restricted themselves to contrasting all women in polygynous unions with women in monogamous unions. In such studies, the unit of analysis is women, not marriages. The problem with this approach is that first wives and higher-order wives are likely to differ in their characteristics. For example, first wives may be older than monogamously married women on average, while higher-order wives may be younger than monogamously married women. Polygynously married women as a whole may not differ in age from those in monogamous unions.

The advantages of considering first and higher-order wives separately can be clarified by an excursion into the formal demography of polygyny (van de Walle 1968; Lesthaeghe *et al.* 1989). For a population, the prevalence of polygyny can be measured by p, the proportion of men in polygynous marriages. The intensity of polygyny is indicated by w, the average number of wives per polygynist. The polygyny ratio, M, or ratio of currently married women to currently married men, is:

$$M = pw + (1-p) = 1 + p(w-1)$$

Thus, the proportion of currently married women who are in monogamous unions is:

$$\frac{1-p}{1+p(w-1)}$$

the proportion of married women who are first wives is:

$$\frac{p}{1+p(w-1)}$$

and the proportion of married women who are second or higher wives is:

$$\frac{p(w-1)}{1+p(w-1)}$$

Taking marriages as the unit of analysis, the odds that a union is polygynous are formally identical to the odds that a married woman is the first wife in a polygynous union, rather than married monogamously:

$$\frac{p}{1-p}$$

Taking polygynous marriages as the unit of analysis, the odds of being a higher order wife rather than the first wife in a polygynous union are equally an index of the intensity of polygyny in the population:

$$\frac{p(w-1)}{p} = (w-1)$$

On the other hand, the odds of a woman being in a polygynous union rather than monogamous one, reflect both the prevalence and intensity of polygyny:

$$\frac{p + p(w-1)}{1-p} = \frac{pw}{1-p}$$

We have argued already that there is no reason to expect the characteristics of first wives and higher-order wives to be the same. Equally, there is no reason why the determinants of the prevalence and intensity of polygyny should be the same. To compare all polygynously married women with those in monogamous unions conflates two different aspects of the marriage system.

If logistic regression analysis is used to model the characteristics of first wives compared with monogamously married women and then of higher-order wives compared with first wives, the resulting odds ratios can be interpreted in two ways. From an individual perspective they identify the relative risks of women with different characteristics being in different marital situations. Equally, however, from a macro-level perspective the two regression models indicate the differential prevalence and intensity respectively of polygyny in sub-populations with different characteristics. This is a more natural way of interpreting differentiation according to the characteristics of husbands. Comparison of men in monogamous and polygynous marriages identifies the characteristics of polygynists. Comparison of the characteristics of

the husbands of first wives with the characteristics of the husbands of higher-order wives identifies those men who are likely to have three or more wives.

Modelling the prevalence and intensity of polygyny yields an incomplete decomposition of the dynamics of polygyny in Africa. The characteristics of men and women in different types of union reflect both differential patterns of entry into these unions and differential patterns of divorce and widowhood. Moreover, analysis of the formation and dissolution of unions in societies with polygynous marriage is considerably more complicated than it is in monogamous populations. Monogamous unions can become polygynous but may also end in the competing outcome of divorce. Polygynists may acquire additional wives or revert to being monogamous through divorce or widowhood. For women, two exits from the unmarried state exist: marrying an unmarried man or a married man. Thus, an association between a particular characteristic and polygyny can arise in several ways. For example, more first wives in polygynous unions than monogamously married women might be infertile. This could be because men are more likely to take another wife if the first woman that they marry is infertile. It could also be because men who would have otherwise remained monogamously married tend to divorce infertile women and remarry. Finally, it could be because infertile women are less likely than fertile women to divorce their husband if he takes another wife. Similarly, if the intensity of polygyny is greater among wealthy men, this might not be because they are more likely to take additional wives but because their wives are less likely to divorce them. While modelling the incidence of marriage and divorce separately according to union type would be desirable, few surveys have been conducted in sub-Saharan Africa that have collected the very detailed marriage histories needed to do so (but see Antoine and Nanitelamio 1995).

To some extent, the characteristics that direct individuals and couples into different marital situations and the characteristics that keep them there are likely to be the same. Systematic differences are likely, however. In particular, while they may take into account their existing partner's views, the decision to take another wife is made by men. They may decide to do so because they are dissatisfied with their existing union. In contrast, the only option available for women who are dissatisfied with their marriage is divorce. In particular, women often leave their husband because he has taken another wife (Antoine and Nanitelamio 1995; Meekers and Franklin 1995). Thus, differentials in the prevalence of different types of marriage according to men's characteristics may reflect largely differential patterns of entry into unions. In contrast, differentials in the prevalence of different marital situations according to women's characteristics are likely to reflect a greater component of differential marital dissolution.

TRENDS IN POLYGYNY

Table 1 presents data on the proportion of married women who are in polygynous unions for 25 sub-Saharan African countries that have conducted a DHS survey that asked about polygyny. These DHS data broadly confirm the persistence

of the geography of polygyny described by earlier researchers (for example, Lesthaeghe *et al.* 1989). Polygyny is most common in the far west of Africa. While some overlap exists between the regions, fairly high levels of polygyny are found in the rest of West Africa and coastal Central Africa and moderate levels in East Africa. Polygyny is least common in Burundi, Rwanda, and Southern Africa. Nevertheless, polygyny is clearly an important aspect of the marriage system throughout mainland sub-Saharan Africa. Only in Madagascar are very few women married polygynously. This country has a very different cultural history from the mainland.

(Table 1 about here)

Most of the pair-wise comparisons of successive estimates for particular countries in Table 1 suggest that polygyny is in decline. What is perhaps more striking though is that the amount of change over the past 25 years has been small. Only in two countries, Ghana and Kenya, is there evidence of a significant drop in the proportion of women who are married polygynously during this period. In addition, the proportion of women in polygynous unions may have fallen somewhat in Côte d'Ivoire, Rwanda, and Uganda.

The five countries selected for detailed study include one country where polygyny is very common (Senegal), a West African and an East African country with a fairly high level of polygyny (Ghana and Uganda), and two of the countries where polygyny is moderately common (Kenya and Zambia). Ghana and Kenya are the two countries surveyed by the DHS programme in which clear evidence exists that polygynous marriage is in decline. All the surveys analysed were conducted as part of the first round of DHS enquiries except that in Zambia, which is a DHS-II survey.

DATA

In the DHS questionnaire, women who report that they are married or living with a man are asked whether he has any other wives. If they answer in the affirmative, they are then asked 'How many other wives does he have?' and what rank wife they are. An important issue to consider before studying the prevalence of polygyny using these data is whether women answer these questions accurately.

The distinction between marriages and other sexual unions is both important and clearly recognised almost everywhere in Africa. Marriage legitimates sexuality and fertility. Equally, the distinction is blurred at the margin. Evidence exists from parts of West Africa of systematic attempts to deceive interviewers about some aspects of family life (Bleek 1987). In general, however, the evidence from more than 25 years of fertility surveys in sub-Saharan Africa is that women answer survey questions as well as they can. Thus, there is much to be said for the accepting respondents' self-definition of their marital status. Inevitably though, this can lead to inconsistencies between statistics collected in different ways (van de

Walle 1993). In particular, the reports of a man and his partners about the status of their union will sometimes be inconsistent.

Three forms of inconsistency seem likely in survey data on whether a union is polygynous. First, if men regard polygyny as desirable, they may claim to be polygynists even if a disinterested observer from the same society would dispute this. Second, if women regard monogamy as desirable, some respondents may report that they are in a monogamous union instead of being the first wife in a polygynous union. It seems unlikely that it is common for women not to know about co-wives that their husband married formally with the payment of bridewealth and accompanying celebrations. It is more likely that women fail to report (or even know about) the informal but enduring unions that their husbands have contracted with other women, particularly if these women reside in a different locality from the respondent. Third, some women may report that they are a   junior wife, although both their partner's view and the local consensus would be that they are the girlfriend of the man in question rather than his wife.

Enquiries that collect detailed data on polygyny from the entire adult population provide a number of opportunities for cross-checking the consistency of the responses of men and women and different women. Fertility surveys that collect data from women of childbearing age provide fewer such opportunities. In Ghana and Kenya though, the DHS enquiries collected information on polygyny from a sub-sample of respondents' co-resident husbands as well as from women. Table 2 compares husbands' and wives' reports about whether their union is polygynous. In Ghana, 4.2 per cent of couples disagree about whether the union is polygynous. In Kenya, 6.3 per cent of couples disagree. Thus, in Ghana, 6 per cent of the women whose husbands say that they have more than one wife claim to be in a monogamous union and 8 per cent of women who say that they are polygynously married have husbands who say that they have just one wife. In Kenya, the equivalent proportions are larger: 14 per cent and 15 per cent. Many of these disputed unions might be difficult to classify even if one knew a lot about them.

(Table 2 about here)

If one can assume that an impartial arbitrator from the same culture would confirm at least some of the wives' reports, rather than their husbands', the level of inconsistencies in Ghana and Kenya is not too worrying. However, data were collected only from those husbands who were living with the female respondents. It seems likely that women's reports about whether their husbands have other wives will be less accurate when he is not living with them. This consideration suggests that, in Kenya at any rate, misclassification bias probably is a significant problem. Similar comparisons of husbands' and wives' reports about whether their marriage is polygynous have been published in the first reports on several other DHS surveys in Africa. In the DHS-II survey in Senegal, 3.6 per cent of couples gave inconsistent

answers. In Burkina Faso, 3.4 per cent of couples were inconsistent, in Cameroon 1.9 per cent, and in Tanzania 6 per cent. These findings do not bear directly on the data for Senegal, Uganda, and Zambia analysed here but do suggest that most DHS surveys in Africa have collected better quality data on polygyny than the DHS-I survey in Kenya.

A second check that is possible is to compare the number of women who report that they are first wives with the number of women who report that they are second wives. If data were available on women of all ages, these numbers should be the same (after allowing for sampling error and ignoring polygynous unions that span national boundaries). Extending this logic, women who report that their husbands have n wives should be distributed equally between ranks 1,2, ... n.

As Table 3 shows, evidence exists from three of the five surveys considered here, Ghana, Kenya, and Zambia, of widespread misinterpretation   by interviewers and/or respondents of the question about how many other wives the husband has. Some responses clearly refer to the husband's total number of wives including the respondent. In Ghana, for example, only 9.9 per cent of currently married women said that their husband had one other wife but 18.5 per cent said that he had two other wives. If one examines the reported rank of the latter women, 251 first wives, 284 second wives but only 24 third wives were interviewed. Similar discrepancies exist in Kenya and Zambia. In all three surveys, the deficit of third wives is statistically significant (using an estimated design effect of 1.6). It is unlikely that this inconsistency arises from wives understating their rank because no deficit exists of second wives compared with first wives.

(Table 3 about here)

The substantive analyses reported on here do not use this questionable information on the exact number of co-wives of polygynously married women. To examine further the quality of the other questions on polygyny, however, the excess first and second wives who reported that they have two co-wives are reallocated in Table 4 to unions with two wives only. Similar errors may exist in the data on women who report three or more co-wives but no clear evidence of this exists. Moreover, the number of women involved is small. Therefore, these data have not been adjusted.

In all five countries, more women in polygynous unions report that they are their husband's second wife than that they are his first wife. The excess of second wives ranges from 9 per cent in Senegal to a massive 41 per cent in Kenya (see Table 3). Such discrepancies need not imply that the data are inconsistent. Because DHS surveys only interview women aged less than 50, some of the first wives of the men married to respondents who are second wives will be too old to be eligible for interview themselves. As marriages in which the first wife is aged less than 50 and the second wife is aged at least 50 are rarer, one would expect DHS surveys to interview more second than first wives. To proceed further, the size of this excess has to be estimated.

Using information on the marital rank of women, one can calculate how many senior wives these higher-rank wives have according to age. To determine how many of these senior wives are aged 50 or more, one needs an estimate of the average age gap between co-wives. Few surveys in sub-Saharan Africa have reported this information. In Southern Benin, higher-order wives are 9.3 years younger than first wives (Donadjè and Tabutin 1994, Table 18). The DHS-II surveys in Burkina Faso, Cameroon, Niger, and Tanzania conducted surveys of husbands or men, matched women with their husbands and reported the mean age difference between spouses by women's marital rank. We have calculated the same statistics for the Ghana and Kenya surveys analysed here. The mean age gap between first and higher-order wives in these six countries ranges from 5.0 years in Tanzania to 9.6 years in Kenya, averaging 7.9 years. These differences probably underestimate the mean age gap between all pairs of co-wives because no information is available on co-wives if they are aged more than 50 or if the husband does not live with the respondent.

While age at marriage distributions are right skewed, distributions of differences between these distributions are closer to normal. Thus, we assume that age differences between junior and senior wives are distributed normally with a mean of 9 years and standard deviation of 6 years. (The final estimates are very robust to what is assumed about the shape and variance of the age difference distribution). Applying this distribution to the numbers of senior wives by age of respondent produces an estimate of the proportion of the senior wives aged more than 50 years. The proportions that result are 7 per cent in Uganda, 10 per cent in Senegal, 12 per cent in Ghana and 13 per cent in Kenya and Zambia.

(Table 4 about here)

Table 4 tabulates women by number of co-wives and their rank within the marriage after adding the estimated number of respondents' senior co-wives who are aged 50 or more into the table and adjusting for over-reporting of the husband's number of other wives. A good match exists between the numbers of first and second wives in Ghana, Senegal, and Zambia. In Uganda, however, a 7 per cent deficit of first wives remains in the adjusted data and, in Kenya, an 18 per cent deficit of them. These inconsistencies suggest that, in these two countries, either some girlfriends reported that they were higher-order wives or some first wives of polygynists reported that they were monogamously married. None of the discrepancies between the numbers of second and third wives evident in Table 4 are statistically significant.

Elaboration of Table 2 by the wife's rank in Kenya reveals no *net* disagreement between spouses about whether the women are monogamously married or first wives but shows that 5 per cent net of women who said that they were higher-order wives had partners who said that they were monogamously married. The responses of the higher-order wives therefore seem more suspect. Bearing in mind that these couples are co-resident, this is surprising. It suggests that men are more likely than the women that they now live with to claim that they have divorced their earlier wives. Possibly, the

matching of women to their husbands represents a further problem with the Kenyan data. In addition, inconsistent reporting by those women who do not live with their husband may follow a different pattern. We judge that the inconsistencies for Uganda are not overly worrying. The findings for Kenya again suggest the need to treat the data on this country with some caution.

Table 5 presents descriptive data on the distribution of the samples of currently married women according to type of marital union for several demographic, cultural and socio-economic characteristics. Some of these measures merit explanation.

(Table 5 about here)

Age and marital duration are closely correlated. In combination with age at marriage each defines the other. Exploratory analyses revealed that inclusion of each variable in regression models predicting polygyny rendered the other redundant. As we anticipated, marital duration explains more of the variation in polygyny than age. In the sections of the paper that follow, therefore, we present only duration-based models.

To assess the effects of infertility on women's marital histories, we focus on primary sterility. To assess to what extent secondary sterility affects the future marital histories of couples whose union has already been cemented by the birth of one or more children would be hard. Even measuring primary sterility is difficult. What matters for marriage and divorce, however, is whether women and their husbands believe that they can have children. Negative judgements are probably based on failure to bear children in the first years of marriage. Information on this is available from the DHS birth histories. Because some women in Africa marry at very young ages or divorce soon after marriage, we adopt a conservative definition of infertility: if a woman has failed to bear a child within five years of her reported date of first marriage, we classify her as infertile.

Senegal has a Muslim population with a small Christian minority, while the other countries examined are primarily Christian. All of them except Zambia have a significant Muslim minority. Respondents with other religious beliefs largely comprise those with traditional African belief systems and those who say that they have no religion. The two groups seem similar, rather than the latter representing a group of Westernized atheists. In Zambia, a few Muslims are also included in this residual category.

Economic status is widely believed to be an important determinant of polygyny and the analysis includes several indicators that measure different aspects of it. Inevitably, these measures are confounded with each other and also measure 'Westernization' to some extent. Household wealth is measured by a four-category index based on characteristics of the households' dwelling and its ownership of consumer durables. Rather than simply sum these attributes, each is

weighted by the natural logarithm of the proportion of all married women having that attribute. Thus, a consumer durable owned by one quarter of women's households weighs the same as two durables owned by half the women. In all countries, the poorest group of households benefits from none of the consumer durables or housing improvements asked about by the DHS and the lower middle category owns just one commonly available possession. In Ghana and Senegal this is a radio, in Uganda and Kenya it is a bicycle, and in Zambia it is either a radio or a bicycle. One limitation of this index is that it underestimates the wealth of men who maintain more than one household. In addition, when interpreting the impact of wealth, it should be borne in mind that it is not clearly a causally prior variable. Some household assets will have been acquired after marriage and polygyny may remain to an extent a source of wealth.

A three-way classification is adopted of husbands' occupations. Men who work in agriculture are distinguished because involvement in this sector of production may provide a direct economic incentive to polygyny. Second, we distinguish men in white-collar occupations (professional, technical, managerial, and clerical) from those in lower status jobs outside agriculture. We also examine differential polygyny by education of men and women. Having controlled for wealth, residence, and men's occupations, experience of schooling can probably be interpreted as a measure of Westernization rather than of socio-economic status.

The final characteristic that merits brief discussion is ethnicity. It has been included in the analysis to improve the description of the data rather than to test a causal hypothesis. In all five countries, the other characteristics considered explain some but not all of the ethnic differentials in polygyny. Therefore, modelling of the data was completed by incorporating coefficients for those ethnic groups that had significantly different marriage patterns from the bulk of the population after controlling for their other characteristics.

DIFFERENTIAL PREVALENCE OF POLYGYNY

Table 6 presents logistic regression models of the odds that a marriage is polygynous rather than monogamous according to women's characteristics and those of their husbands. As expected, the proportion of husbands who have taken another wife increases rapidly with union duration. This association between the prevalence of polygyny and marital duration is particularly steep in the most polygynous country, Senegal. Controlling for marital duration, remarried women are less likely to be the first wife in a polygynous marriage than women whose first marriage remains intact. The differential is similar in size in all five countries considered. On average, controlling for marital duration, remarried women are about 45 per cent less likely to be the first wife of a polygynous man than women in their first union. In none of the five countries is there any evidence that women's age at first marriage influences the odds of their husband taking a further wife and it has been removed from the models. Men's age at first marriage might be more likely to affect whether they take another wife but information on husbands' ages at marriage is not normally collected by DHS surveys. While models (not shown) fitted

to the reduced sample of women with co-resident husbands in Ghana and Kenya that control for marital duration suggest that men who marry young are no more likely to become polygynists than other men, different results might be obtained if data were available on the ages at marriage of all men.

(Table 6 about here)

Our measure of primary sterility is clearly a crude indicator of those marriages where it has become apparent that the couple is unlikely to bear children. Nevertheless, except in Ghana, the outcome of differential divorce and entry into polygynous unions is that the husbands of childless women are about twice as likely to be polygynists as other men. Despite the very small number of such couples, the differential is statistically significant in Kenya and Senegal. It is also significant (and about the same size) in simpler models for Uganda and Zambia.

Men's experience of schooling does not affect their likelihood of being polygynists in any of the countries after controlling for the impact of their occupational status and household wealth. Thus, while men's education influences their current economic status, it does not reduce their desire to marry polygynously. Except in Kenya, women's education also has rather little impact on polygyny. It is completely unimportant in Zambia but elsewhere the small number of men whose first wife attended secondary school are slightly less likely to be polygynists than the husbands of other women. In Ghana, Senegal, and Uganda, however, women's primary schooling does not have any effect. By contrast, in Kenya the husbands of women who have been to school are much less likely to have another wife than the husbands of uneducated women.

The relationship between men's socio-economic status and their odds of being polygynous is complex and varies between countries. The hypothesis that men involved in agricultural production are more likely to be polygynists receives little support. This pattern is observed in Zambia. In Kenya, on the other hand, farmers are less likely to be polygynists than other men once their other characteristics have been allowed for. Men with white-collar jobs are slightly less likely to be polygynists than other non-agricultural workers in all five countries. This consistent pattern suggests that middle class men in Africa may be less motivated to marry polygynously than other men. If they are, however, the effect is only small.

In Kenya, Senegal, and Uganda, men in poor households are less likely to be polygynists than other men. On the other hand, men in wealthy households are highly polygynous only in Ghana and Uganda. Regrettably, the index of ownership of assets fails to measure income or wealth precisely, to disentangle preferences from the ability to realise them, or to allow for reciprocal benefits to socio-economic status that accrue from being married polygynously. Thus, cautious interpretation of these coefficients is advisable. Considering the odds ratios for men's occupation and household wealth

together, however, suggests that, except in Zambia, socio-economic status is positively associated with polygyny. Nevertheless, this relationship is less striking than the anthropological literature had led us to expect.

The odds that a union is polygynous are markedly lower in urban than rural areas in all five countries. As the regression models control for differences in the occupational and educational structures of urban and rural populations and for marital duration, it is likely that urban residence in itself reduces the prevalence of polygynous marriage. The urban effect is similar in size in all five countries. The odds that urban men's marriages are polygynous are about 45 per cent lower than those for rural residents.

To attempt to distinguish between an economic (housing costs) and a cultural (Westernization) explanation of this urban effect, we modelled the interaction of urban residence with the wealth index and men's occupations. The results (not presented) are inconclusive but suggest that the positive association between socio-economic status and polygyny is probably a characteristic of the rural populations of these countries. There is little evidence that socio-economic differentials in the prevalence of polygyny exist within urban areas. In particular, better-off urban dwellers are no more polygynous than the urban poor. This seems more consistent with a cultural than an economic explanation of low levels of polygyny in urban areas. The only exception to this pattern is that, in Uganda, very few of the poorest category of urban dwellers are married polygynously. Bearing in mind the civil and military unrest in Uganda during the 1980s, this may be because in 1988-9 this group largely comprised destitute internal refugees.

Differentials by religion in the odds that a marriage is polygynous broadly follow the expected pattern. Both Muslims and those with other systems of belief are more likely to be polygynously married than Christians. The prevalence of polygyny among the small Christian population of Senegal is particularly low. In Kenya, however, the impact of religion on the prevalence of polygynous marriage is insignificant after adjusting for the other characteristics of the different religious groups.

In all five countries, some of the complexity of ethnic differentiation in the prevalence of polygynous marriage is accounted for by the other demographic, social and economic factors examined here. In Ghana, the prevalence of polygyny is slightly higher among patrilineal populations than matrilineal ones (p=0.107) but there is no further ethnic differentiation in polygyny. In Kenya, only two tribes stand out as more polygynous or less polygynous than the rest of the population They are the Kikuyu, who are very unlikely to be married polygynously and the Luo, who are highly polygynous. Similarly, only the Sereer stand out as less polygynous than the rest of the population in Senegal while, in Uganda, the atypical tribes come from the north of the country (most of which was not surveyed) or from its west. In Zambia, the picture is different. The prevalence of polygyny continues to vary between most of the important ethnic groups after controlling for individual characteristics. These variations cannot be explained by systems of descent alone as most ethnic groups in Zambia have matrilineal kinship systems.

DIFFERENTIAL INTENSITY OF POLYGYNY

Table 7 presents logistic regression models of variation in the odds that a woman in a polygynous union is a higher-order wife rather than the first wife. Marital duration is not included in the analysis because, by definition, higher-order wives have not been married to their husband as long as his first wife. How long it takes husbands to become polygynists is a linked outcome, not a causally prior influence. For characteristics of the husband or couple, the odds ratios can be interpreted as measures of the relative intensity of polygyny, that is higher order-wives per polygynist. For women's characteristics, however, they indicate what differentiates higher-order wives from first wives given that the union is polygynous. Thus, the baseline odds for Ghana and Zambia are less than one although every polygynist must have at least one junior wife. This is because fewer higher-order wives than first wives are still in their first union in these countries. The difference is made up by the large number of remarried higher-order wives.

(Table 7 about here)

For women in their first union, a clear monotonic relationship between age at first marriage and the odds of being a higher-order wife exists in all five countries. The relationship is steepest in Zambia and least strong in Uganda. It was pointed out in an earlier section of the paper that the age at marriage of women who marry single men does not affect whether their husband goes on to take another wife. Therefore, while one cannot rule out the possibility that late marriage is associated with the dissolution of polygynous but not monogamous unions, this association probably arises because single women become more willing to accept a proposal from a married man as they get older.

Second, in all five countries, remarried women are much more likely than single women to be higher-order wives rather than polygynists' first wives. These odds ratios are much larger than the inverse of the odds relative to single women that remarried women are a polygynist's first wife instead of in a monogamous union (see Table 6).   To estimate the relative odds that a divorced or widowed woman remarries a married rather than an unmarried man, we multiply the odds ratios in Table 6 by those for remarried higher-order wives compared with all higher-order wives in their first union, rather than with the reference category of those who married at 16 to 19 years. Some of the differences between the marital situations of once-married and remarried women may arise because women who have married more than once are more likely than other women to get divorced or be widowed again and then take longer to remarry.   This cannot be investigated because DHS surveys do not ask ever-remarried women how many times they have been married but in most of Africa women seldom remain unmarried for long. The percentage of ever-married women who are currently widowed or divorced ranges from 6 per cent in Senegal to 12 per cent in Zambia. Ignoring repeated marital dissolution therefore,

multiplication of the two odds ratios suggests that the relative odds that a divorced or widowed woman remarries a married rather than an unmarried man range from 1.6 in Uganda to 4.0 in Zambia.

The intensity of polygyny in these five countries is differentiated according to only a few of the characteristics examined other than the union variables discussed already. The sole factor that shows signs of being of general significance is men's occupational status. Without exception, the odds ratios in Table 7 are in the opposite direction to those in Table 6. This means that the intensity of polygyny is higher in those occupational groups where the prevalence of polygyny is low. In other words, monogamy occurs disproportionately at the expense of bigamy, rather than of polygynous unions involving more than two wives. Thus, in Kenya and Senegal, where the prevalence of polygyny is higher among men working outside agriculture, the mean number of wives per polygynist is largest among farmers. In contrast, in Ghana, Uganda, and Zambia, it is men in white-collar jobs who are least likely to be polygynists. Those white-collar workers who are polygynists, however, on average have a half to one wife more than polygynous farmers.

Certain other characteristics appear to influence the intensity of polygyny in particular countries. One should perhaps not attach much significance to these results. Five such factors (the four shown and women's schooling) were looked at in each of five countries and only six of them were of significance. The results for Kenya, however, merit brief discussion. Kenya is the one country in which religion is not significantly related to the prevalence of polygyny. However, the intensity of polygyny is higher among those who do not believe in a world religion, and perhaps also among Muslims, than among Christians. Similarly, while the prevalence of polygyny is lower among urban residents in Kenya, urban polygynists have more wives that rural polygynists. Finally, the small number of polygynous unions among the Kikuyu involve two more wives on average than polygynous unions among other ethnic groups.

DISCUSSION

This paper uses individual-level DHS data to study differential polygyny distinguishing men's first and higher-order wives. It argues that this is important because the determinants of the prevalence of polygyny and the intensity of polygyny may differ. The results provide evidence to support this view. More socio-economic and other characteristics affect the prevalence of polygyny than affect its intensity. In addition, some factors have opposite effects on women's odds of being a polygynist's first wife and their odds of being a higher-order wife. The most dramatic example of this is perhaps an obvious one. Women who have married more than once are unlikely to be a first wife but very likely to be a higher-order wife. Any analysis that grouped together all wives of polygynists would have revealed only a smaller tendency for remarried women to be married polygynously.

The findings for some socio-economic characteristics are similar. Men's occupations that are associated with a low prevalence of polygyny are associated with a high intensity of polygyny. The same pattern exists in Kenya for the Kikuyu

and for urban residents. These contrasting socio-economic differentials in the prevalence and intensity of polygyny would also have been missed if we had grouped together first and higher-order wives. They imply that polygynists are a heterogenous group. The propensity towards polygyny of those men who have many wives is affected less by their circumstances than that of men with fewer wives. Thus, any decline in the prevalence of polygyny in Africa is likely to lead to increasing polarization of the adult population into those in monogamous unions and those in unions that tend to involve several wives.

The five countries included in this study are characterised by differing levels of social and economic development, cultures, and levels of polygyny. Despite this, polygyny interlocks with other aspects of the marriage in broadly the same way in all the countries. Previous studies of the demography of polygynous marriage systems have shown that they are maintained by a large gap between the ages at marriage of men and women and rapid remarriage of divorced and widowed women (Goldman and Pebley 1989; Lesthaeghe *et al.* 1989). This analysis provides a complementary individual-level perspective.

Women in societies where it is considered abnormal for their sex to be unmarried, but where men are unable to acquire bridewealth and marry until well into well into their twenties, are faced with a permanent marriage squeeze. Not all women are equally likely to have to deal with this by marrying a man who already has one or more wives. Women who do are disproportionately divorcees, widows, and women who either chose or were forced to postpone first marriage. Thus, the proportion of remarried women who have become junior wives ranges from 27 per cent in Ghana and Zambia up to 51 per cent in Senegal. Moreover, the proportion of second wives who have been married before ranges from 15 per cent in Kenya, where divorce is relatively uncommon, to 56 per cent in Zambia.

In all five countries, when divorcees and widows do remarry single men, these unions are relatively unlikely to become polygynous subsequently. Several mechanisms might be involved in this. Many of these women may have divorced their first husband because he took another wife. Such women may be strongly motivated to find a new partner who does not want to be a polygynist or determined to dissuade their husbands from this step whatever his preferences. Alternatively, remarried women may be much less likely to react to their husband taking another wife by divorcing him than women who are still in their first marriage.

What distinguishes the most polygynous country, Senegal, is not the proportion of men who become polygynous soon after they first marry. This is only slightly higher than elsewhere. Differencing the proportions implied by the fitted odds ratios according to marital duration, suggests that the rate at which men become polygynists accelerates at higher marital durations in Senegal. In the other four countries, the net rate of entry into polygynous unions varies little by marital duration. Thus, the high prevalence of polygyny in Senegal, compared with the other four countries, arises because of the large number of middle-aged men who take a second wife.

Our results clearly document the selection of childless women into polygynous unions. The husbands of many of these women have taken another wife. A disproportionate number of the rest of them are junior co-wives (see Table 5). While some of these women are in their first marriage but married an infertile man, many have divorced and remarried. The absence of significant coefficients for infertility in Table 7 implies that childless women are about equally likely to end up as first and higher-order co-wives. It has often been suggested that the selection of sub-fecund women into polygynous unions is an important part of the explanation of the lower fertility of such unions. Pebley and Mbugua (1989) document this using data from several WFS surveys, including those conducted in Ghana and Senegal, but suggest that it does not explain the lower fertility of polygynous unions in Kenya. However, sterility is the one proximate determinant of fertility that they do not investigate using multivariate methods. This decision may have distorted their findings. It also seems odd that the total marital fertility of many of the groups of women for whom they present results is lower for parous women than for all women (Pebley and Mbugua 1989, Table 7.1). Our results based on DHS data show that the selection process operates widely in Africa, including in Kenya.

Apart from the interlocking of polygyny with other aspects of marriage and reproduction, one other differential is remarkably uniform across the five countries. This is the lower prevalence of polygyny in urban areas. If the costs of maintaining polygynous households in urban areas were prohibitive, one would expect the urban poor to be affected more. They are not. Therefore, we conclude that the lower prevalence of polygyny in urban areas reflects urban residents' preferences. It also seems unlikely, however, that the reason urban residents are less likely to be married polygynously is that a process of Westernization has reduced their commitment to the practice. If Westernization were important, one would expect schooling to be a better discriminator than urban residence. Yet, men's education has no net impact on the prevalence of polygyny and, except in Kenya, women's schooling makes an appreciable difference only among the small group who have attended secondary school. Perhaps what urban men share in all five countries is greater opportunities for extra-marital sexual relationships as an alternative to taking another wife. It is also possible that living in urban areas encourages the development of aspirations that compete with the desire to marry polygynously.

While this analysis provides some evidence that polygyny is associated with wealth and high socio-economic status, the effect is weaker than we had anticipated on the basis on the anthropological literature. Except in Kenya, it is the unimportance of educational and socio-economic differentials in polygyny that is the most striking feature of these results. The most likely effect of misclassification of monogamous and polygynous marriages would be to bias the estimated odds ratios towards one. However, our investigations of the quality of these DHS data raise most questions over those for Kenya, which is where the prevalence and intensity of polygyny are most differentiated. Antoine and Nanitelamio (1995) also found few socio-economic differentials in polygyny in their research in Dakar. To generalize the conclusion that they draw, the implication may be that in most African countries all men are potential polygynists. Within a particular socio-cultural

context, which men and women end up married polygynously seems to depend more on their luck or otherwise in the marriage market than on their individual socio-economic characteristics.

The discussion so far has emphasized commonalities in the institution of polygyny across the five countries considered. However, important aspects of the practice do differ from country to country. Polygyny is much less prevalent in Kenya and Zambia than in Ghana or Uganda and is most prevalent in Senegal. Nevertheless, the baseline proportions in Table 6 indicate that a farmer married to an uneducated, Christian, parous woman is about equally likely to be have acquired another wife in Ghana, Kenya, and Zambia and slightly more likely to be polygynous only in Uganda.

Standardization by each indicator in turn suggests that the most important reason for the lower prevalence of polygyny in Kenya is the large impact of women's schooling in this country combined with the high level of schooling of the female population. In Zambia, it is the large impact of employment outside agriculture that is important, combined with the relatively small size of the agricultural sector. In both countries, the small size of the non-Christian population is also a factor. Thus, the low prevalence of polygyny in Zambia and the low and declining prevalence of polygyny in Kenya is associated in both countries with a high degree of socio-economic change. Nevertheless, the details of the inter-linkages between development and polygyny are quite different in the two countries. In neither country, however, is the low prevalence of polygyny a product just of structural change in the composition of the population. What is also crucial is that, for reasons that cannot be illuminated by the study of fertility survey data, characteristics that do not reduce the prevalence of polygyny in the other three countries analysed do have this effect in these two.

The results provide much other evidence of the importance of the social context to the understanding of marriage patterns in Africa. The individual-level characteristics that we consider explain only some of the ethnic variations in polygyny within these countries. Moreover, certain characteristics differentiate in some populations but not others. As discussed already, opposing differentials in the prevalence and intensity of polygyny are found by socio-economic status in all five countries. However, occupational groups that are characterised by a high prevalence and low intensity of polygyny in some countries are characterised by a low prevalence and high intensity of polygyny in others.

DHS survey data are a far from ideal tool with which to investigate polygyny. The data are collected from women. In many respects, data collected from men would be more suitable for the study of this subject. First, the evidence that we assembled supports the proposition that decisions to bring another wife into a marital union are made largely by husbands not wives and are influenced more by men's characteristics than those of women. By collecting data on men, one could aspire to obtain more wide-ranging and accurate information on the factors that influence polygyny. Second, the natural unit of analysis for the study of polygyny is the union. In polygynous societies, a one-to-one correspondence exists between men and unions but not women and unions. If one was to collect information from men, however, obtaining detailed information on the aspects of women's marriage and fertility histories that have proved important in this study

would be impossible. Collection of complete, linked marriage histories from all partners in a marriage might seem an ideal. Whether collecting such complex information accurately would be possible is uncertain. Even if this could be done, the analysis of such rich material might prove an intractable problem. Family demography is not a sub-discipline in which progress has been rapid even when dealing with the simpler domestic groups found in Western societies. To get to grips with the more diverse and complex forms of marriage and very high levels of divorce found in Africa will be a challenge indeed.

CONCLUSIONS

There are limitations to what can be achieved by an individual-level analysis of polygyny using DHS or any other survey data. Changes in attitudes to the institution are best investigated using other research designs. Moreover, many of both the determinants and the dynamics of polygyny operate at the level of the population not the couple. Nevertheless, this analysis has proved a valuable complement to earlier analyses of aggregates. First, it has helped to show that aspects of a polygynous marriage system such as the marriage squeeze faced by unmarried women affect individuals with varying life histories differently. Second, it has helped to clarify the conditions under which polygyny will endure or decline in sub-Saharan Africa. Third, it has found that any decline in the prevalence of polygyny may be accompanied by a rise in the proportion of the remaining polygynous marriages that involve three or more wives.

It has become a tradition for papers on polygyny in sub-Saharan Africa to conclude with a statement that the institution is alive and well. The data collected in the last decade by the DHS programme of surveys support this view. Nevertheless, polygyny is not an immutable feature of marriage in the continent. The prevalence of polygyny fell greatly in Southern Africa between the late-nineteenth and mid-twentieth centuries (Timæus and Graham 1989). Moreover, polygynous marriage is clearly in decline currently in at least Ghana and Kenya. It probably also became less prevalent at some point in Zambia. Among the five countries examined here, the downward trend in polygyny is most rapid and advanced in Kenya where, at least at this stage in the process, a high level of differentiation in the prevalence and intensity of polygyny across the population has developed compared with other African countries. The drop in polygyny in Kenya is accounted for in part by changes in the composition of the population brought about by the development of the country over the past few decades. These would have had no effect, however, without the emergence of socio-economic differentials in polygyny. The question that DHS data cannot answer is why certain high status groups seldom marry polygynously in Kenya and Zambia while elsewhere in Africa they continue to do so.

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Table 1. *Percentage of currently married women in polygynous unions,*
recent national surveys in sub-Saharan Africa

Country	WFS 1977-82	DHS-I 1986-90	DHS-II 1990-93	DHS-III 1993-96
Benin	34.6			
Burkino Faso			51.1	
Burundi		11.6		
Cameroon	39.7		38.6	
Central African Rep.				28.5
Côte d'Ivoire	41.4			36.6
Ghana	**34.4**	**32.6**		**27.7**
Guinea				49.6
Kenya	**29.5**	**23.4**		**19.5**
Lesotho	8.5			
Liberia		38.0		
Madagascar			3.5	
Malawi			32.2	
Mali		45.1		44.3
Namibia			12.6	
Niger			36.2	
Nigeria	43.1		40.9	
Rwanda	18.4[*]		14.4	
Senegal	**48.5**	**46.5**	**47.3**	
Sudan (Northern)	16.8	20.2		
Tanzania			27.5	
Togo		52.3		
Uganda		**34.2**		**29.9**
Zambia			**17.7**	
Zimbabwe		16.6		18.6

[*] The survey in Rwanda was not officially a WFS survey but adopted a similar design and questionnaire.

Table 2. *Consistency of reporting of the number of partners in the union by co-resident husbands and wives, Ghana and Kenya Demographic and Health Surveys (unweighted)*

Wives' reports	Husbands' reports			
	Monogamous	2 wives	3+ wives	Total
Ghana				
Monogamous	676	16	1	693
2 wives	7	101	1	109
3+ wives	18	137	51	206
Total	701	254	53	1008
Kenya				
Monogamous	889	30	5	924
2 wives	25	129	3	157
3+ wives	14	38	51	103
Total	928	197	59	1184

Table 3. *Currently married women according to the number of wives in the union and their reported rank, five Demographic and Health Surveys*

co-wives	1st wife	2nd wife	3rd wife	4th+ wife
Ghana				
0	2041			
1	143	155		
2	251	284	24	
3+	21	32	43	21
All unions	2456	471	67	21
Kenya				
0	3635			
1	251	386		
2	123	127	77	
3+	15	35	54	41
All unions	4024	548	131	41
Senegal				
0	1710			
1	501	534		
2	111	122	140	
3+	21	21	23	38
All unions	2343	677	163	38
Uganda				
0	2088			
1	313	365		
2	90	108	89	
3+	30	28	21	43
All unions	2521	501	110	43
Zambia				
0	3661			
1	227	271		
2	81	94	28	
3+	18	20	20	24
All unions	3987	385	48	24

Table 4. *Currently married women according to the number of wives in the union and their own rank, five Demographic and Health Surveys (adjusted for misreporting of rank and to include first wives aged 50 or more[a])*

Number of	Rank within union			
co-wives	1st wife	2nd wife	3rd wife	4th+ wife
Ghana				
0	2041			
1	425	415		
2	24	24	24	
3+	24	32	43	21
All unions	2514	471	67	21
Kenya				
0	3635			
1	353	436		
2	77	77	77	
3+	17	35	54	41
All unions	4082	548	131	41
Senegal				
0	1710			
1	554	534		
2	123	122	140	
3+	23	21	23	38
All unions	2410	677	163	38
Uganda				
0	2088			
1	336	365		
2	97	108	89	
3+	32	28	21	43
All unions	2553	501	110	43
Zambia				
0	3661			
1	326	337		
2	28	28	28	
3+	21	20	20	24
All unions	4035	385	48	24

[a] These adjustments are described in the text.

Table 5: *Percent distribution of currently married women according to type of union by their characteristics, five Demographic and Health Surveys*

	Ghana				Kenya				Senegal				Uganda				Zambia			
Characteristic	Monog.	1st wife	2+ wife	N	Monog.	1st wife	2+ wife	N	Monog.	1st wife	2+ wife	N	Monog.	1st wife	2+ wife	N	Monog.	1st wife	2+ wife	N
Age (years)																				
15-19	84.7	4.3	11.0	163	87.4	0.4	12.2	296	72.2	3.3	24.4	360	76.7	4.2	19.1	399	90.8	1.8	7.3	521
20-24	75.0	8.7	16.3	576	82.4	2.9	14.6	877	67.1	8.7	24.2	633	68.2	9.7	22.0	682	89.5	3.3	7.2	988
25-29	72.2	12.1	15.7	712	82.4	4.9	12.7	1120	59.4	13.2	27.4	704	67.8	12.6	19.6	699	82.8	8.8	8.4	942
30-34	66.3	16.2	17.5	543	72.5	10.1	17.4	845	43.5	24.6	31.9	593	61.7	17.1	21.2	479	77.4	9.1	13.5	755
35-39	57.6	14.5	27.9	455	73.7	11.1	15.3	719	35.9	35.0	29.2	432	60.1	14.3	25.5	350	77.7	8.5	13.8	533
40-44	57.9	19.3	22.8	290	67.1	14.3	18.7	542	40.4	34.3	25.3	265	55.5	26.1	18.4	231	77.3	10.4	12.3	416
45-49	60.5	22.5	17.0	276	68.8	14.9	16.2	353	36.4	36.0	27.6	239	60.8	23.8	15.4	210	69.8	15.4	14.7	300
Marital duration (years)																				
0-4	79.2	5.9	14.9	609	83.1	1.3	15.6	1017	74.2	2.6	23.1	644	76.9	3.8	19.2	811	90.7	2.1	7.3	1133
5-9	70.4	11.7	17.9	666	83.6	4.2	12.1	995	63.7	10.3	26.1	702	63.7	12.7	23.6	703	86.2	6.0	7.7	922
10-16	66.4	15.5	18.2	770	78.3	8.0	13.7	1131	48.0	21.4	30.6	842	64.0	16.5	19.4	707	78.1	9.4	12.6	1003
17+	59.7	18.8	21.6	970	68.3	14.1	17.7	1609	36.7	35.2	28.1	1038	59.0	20.6	20.3	829	75.9	11.1	12.9	1397
Age at marriage (years)																				
≤15	68.7	16.2	15.1	697	69.0	13.0	18.0	1251	49.8	22.3	27.8	1563	61.3	16.3	22.4	1069	82.1	9.0	8.9	1376
16-19	66.9	14.3	18.8	1573	80.4	6.8	12.9	2256	54.1	19.0	26.9	1242	69.0	12.3	18.7	1462	82.3	7.2	10.4	2284
≥20	68.3	10.3	21.3	745	77.8	5.4	16.8	1245	61.5	11.6	26.8	421	66.8	11.0	22.2	519	82.7	4.9	12.3	795
Number of unions																				
1 union only	70.3	15.4	14.4	2005	77.8	8.4	13.8	4419	57.4	21.4	21.2	2570	68.4	14.6	17.0	2341	86.5	7.7	5.8	3455
>1 union	62.6	10.6	26.8	1010	60.4	4.1	35.5	333	35.8	12.8	51.4	656	57.5	10.5	32.0	709	67.1	6.0	26.9	1000
Proved infertile																				
No	67.9	13.8	18.3	2976	76.9	8.0	15.0	4679	53.7	19.5	26.9	3131	66.1	13.5	20.4	2983	82.5	7.3	10.1	4382
Yes	51.3	12.8	35.9	39	55.3	15.5	29.2	73	31.6	26.3	42.1	95	51.0	20.1	28.9	67	69.3	12.5	18.2	73
Level of education																				
None	60.9	17.3	21.8	1361	64.7	14.1	21.2	1429	50.9	21.0	28.2	2769	64.7	15.3	20.0	1245	75.1	10.8	13.1	900
Primary	72.4	11.3	16.3	1477	80.2	6.0	13.8	2415	63.3	13.3	23.4	316	66.2	12.9	20.9	1509	82.4	7.4	10.3	2763
Secondary +	80.8	7.3	11.9	177	88.0	3.5	8.5	908	72.3	7.8	19.9	141	69.5	8.0	22.6	286	89.7	3.7	6.6	792
Husband's education																				
None	54.7	18.5	26.7	879	60.9	11.8	27.3	684	49.0	21.7	29.3	2498	64.9	13.9	21.1	542	72.5	12.5	15.0	435
Primary	72.2	13.3	14.5	1419	77.6	8.2	14.2	2275	64.1	16.2	19.7	142	66.0	14.4	19.6	1744	78.6	8.6	12.8	2298
Secondary +	76.7	8.2	15.1	537	84.4	6.1	9.5	1612	74.5	10.4	15.1	212	65.8	11.2	23.0	734	89.2	4.7	6.1	1722
Not known	68.9	10.6	20.6	180	64.1	8.6	27.4	181	63.4	12.8	23.8	374	67.3	11.4	21.4	30	..	..	..	0
Husband's occupation																				
Agricultural	63.4	16.3	20.3	1563	74.4	7.9	17.7	1606	48.7	21.3	30.1	1501	68.0	13.9	18.1	1708	73.0	11.4	15.5	1893
White-collar	70.9	10.1	19.1	446	80.0	7.1	12.9	948	63.2	14.8	22.0	359	69.2	9.5	21.3	335	92.1	2.5	5.3	458
Other	73.2	11.2	15.7	995	76.9	8.8	14.3	2198	55.1	19.3	25.7	1366	60.6	14.3	25.1	1007	88.0	5.0	7.0	2104
Household wealth indicator																				
Low	67.7	14.4	17.9	1352	78.3	7.0	14.7	2790	61.1	14.8	24.1	555	73.2	10.7	16.1	1427	80.3	8.6	11.1	1835
Lower middle	69.5	12.9	17.6	568	68.6	12.9	18.5	1104	51.7	19.9	28.4	1705	60.7	15.1	24.2	574	81.3	7.8	10.9	972

Upper middle	63.2	12.0	24.8	525	82.6	4.7	12.7	500	43.4	26.1	30.6	526	55.7	19.7	24.6	706	75.1	9.5	15.4	697
High	70.0	14.7	15.3	570	84.0	5.4	10.5	358	59.6	17.1	23.4	440	61.2	10.1	28.6	343	91.9	3.2	4.9	951
Residence																				
Urban	71.9	10.1	18.0	890	82.4	4.5	13.2	1146	58.0	15.9	26.1	1045	68.4	8.7	22.9	516	90.8	3.8	5.4	1924
Rural	65.9	15.3	18.8	2125	75.6	8.8	15.6	3606	50.6	21.5	27.9	2181	65.5	14.1	20.4	2534	74.9	10.5	14.6	2531
Religion																				
Christian	71.3	12.0	16.7	2456	78.1	8.1	13.8	4250	79.2	7.3	13.5	96	68.9	12.5	18.6	2615	82.8	7.1	10.1	4286
Muslim	55.0	19.5	25.6	262	65.9	8.7	25.4	206	52.2	20.0	27.8	3130	46.0	19.5	34.5	366	..	..	..	..
Other	48.8	23.2	28.0	297	55.2	8.8	36.0	296	..	..	..	..	68.5	20.1	11.5	69	69.6	13.3	17.1	169

Table 6. *Estimated[a] odds of being the first wife in a polygynous union*
compared with a woman in a monogamous union, five Demographic and Health Surveys

Indicator	Country				
	Ghana	Kenya	Senegal	Uganda	Zambia
Marital duration (years)					
0-4	0.27***	0.19***	0.07***	0.16***	0.16***
5-9	0.66**	0.58**	0.33	0.72*	0.51***
10-16	1	1	1	1	1
17+	1.35**	1.94***	2.24***	1.38**	1.20
More than 1 union	0.63***	0.43**	0.54**	0.57***	0.57***
Proven infertility	1.20	2.20*	2.04***	1.77	1.76
Wife's level of education					
No schooling	1	1	1	1	1
Primary	0.95	0.51***	0.82	0.88	0.94
Secondary +	0.60	0.37***	0.47*	0.54**	1.00
Husband's occupation					
Agricultural	1	1	1	1	1
White-collar	0.77	1.45	1.00	0.70	0.29***
Other	0.83	1.49**	1.19	0.96	0.63***
Household wealth indicator					
Low	1.04	0.48***	0.55***	0.66**	0.89
Lower middle	1	1	1	1	1
Upper middle	1.08	0.61	1.77**	1.81***	1.35
High	1.64**	0.80	1.17	1.75*	0.66
Urban residence	0.63**	0.51***	0.59***	0.54***	0.50***
Wife's religion					
Christian	1	1	0.22***	1	1
Muslim	1.79***	1.17	1	2.34***	..
Other	1.96***	1.46	..	1.38	1.64**
Wife's ethnicity					
Other	1	1	1	1	1
Gh: Patrilineal	1.26				
Ke: Kikuyu		0.15***			
Luo		1.87***			
Se: Sereer			0.77**		
Ug: Acholi, Karimojo				4.31***	
Bakonjo, Banyoro, Baamba				1.60**	
Bakiga, Banyankole, Batoro				0.64**	
Za: Bemba, Nyanga					0.66**
Tonga, Mambwe, Tumbuka					1.89***
Baseline proportion	0.198	0.189	0.373	0.250	0.199
N	2445	4005	2342	2438	4001
- Log likelihood	1022.2	1046.3	1101.4	984.8	973.4

* Significant at p=0.1

** Significant at p=0.05

*** Significant at p=0.01

[a]Using a logistic regression procedure that uses an adaptation of Huber's formula to estimate sampling errors for data collected in cluster surveys (hlogit in the statistical package STATA).

Table 7. *Estimated*[a] *odds of being a higher-order wife in a polygynous union compared with a first wife, five Demographic and Health Surveys*

Indicator	Country				
	Ghana	Kenya	Senegal	Uganda	Zambia
N of unions/age at marriage					
1 union, age at marriage					
≤15 years	0.69*	0.63**	0.66***	0.72**	0.42***
16-19 years	1	1	1	1	1
≥20 years	2.10***	1.62*	1.83***	1.08	2.01***
>1 union	3.07***	4.95***	3.68***	2.35***	5.63***
Husband's occupation					
Agricultural	1	1	1	1	1
White-collar	1.58*	0.83	0.81	1.65**	1.97**
Other	1.23	0.71**	0.85*	1.35**	1.10
Husband's education					
None/unknown	1				
Primary/middle	0.60**				
Post-middle +	0.79				
Urban residence		1.67***			
Religion					
Christian		1		1	
Muslim		1.69		1.18	
Other		2.67***		0.37***	
Ethnicity					
Other		1	1		
Ke: Kikuyu		1.97**			
Se: Poular			0.66***		
Sereer			0.59***		
Baseline odds (w-1)	0.57	1.73	1.45	1.12	0.76
N	969	1095	1516	1008	786
- Log likelihood	616.7	655.3	946.5	647.0	453.0

* Significant at p=0.1

** Significant at p=0.05

*** Significant at p=0.01

[a]Using a logistic regression procedure that uses an adaptation of Huber's formula to estimate sampling errors for data collected in cluster surveys (hlogit in the statistical package STATA).