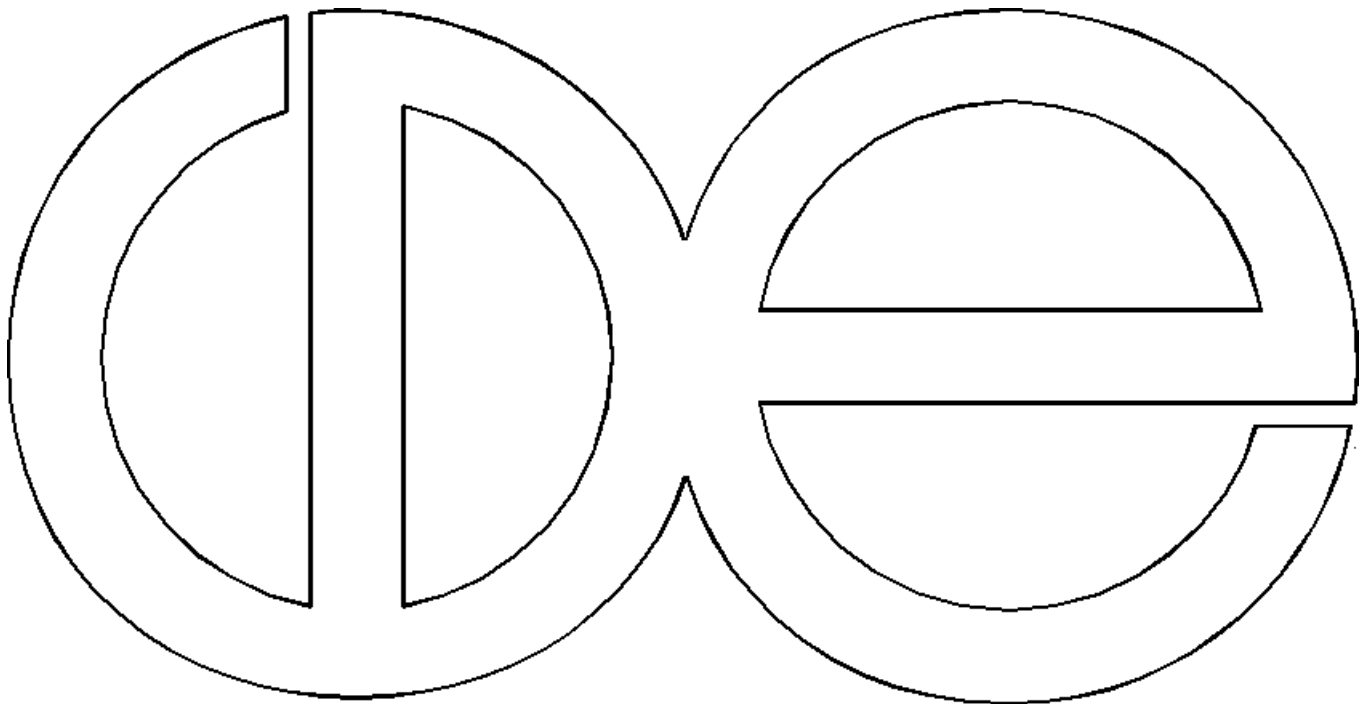


Center for Demography and Ecology
University of Wisconsin-Madison

**Prevalence and Patterns of Female-Headed
Households in Latin America**

Elizabeth Arias
Alberto Palloni

CDE Working Paper No. 96-14



Prevalence and Patterns of Female-Headed Households in Latin America

Elizabeth Arias and Alberto Palloni
Center for Demography and Ecology
University of Wisconsin-Madison

CDE Working Paper No. 96-14

This paper was written as part of the “Changing Household in Latin America” project supported in part by HD28284 of NICHD and a grant from the NSF. We also acknowledge the support of NICHD Center grant HD05876 to the Center for Demography and Ecology at the University of Wisconsin-Madison.

1. INTRODUCTION

Recent research almost uniformly finds increasing numbers of female headed households in developed countries (Garfinkel and McLanahan, 1986; Wojtkiewicz et. al, 1990; Bennett, Bloom and Craig, 1989; Bennett, Bloom and Miller, 1995; Bumpass and Raley, 1995). By some accounts, trends in most developing countries follow a very similar path although with time lags (Buvinic, Youssef and Von Elm, 1978; Buvinic, 1991). Levels and trends in female headed households are important indicators of changes in family organization and in the process of family formation. Although the evidence is somewhat controversial on this score, it is widely suspected that female headed households are more vulnerable to risk, economically less viable, socially less connected and poorly integrated and, finally, enmeshed in a social and economic context that is less than optimum for the growth and development of mothers and children alike.

In this paper we present descriptive evidence regarding trends, patterns, and determinants of female headed households in selected Latin American countries during the period 1970-1990. Our goal is to answer the following questions:

- a) It is thought that levels and patterns of prevalence of female headed households in developing countries follow the increasing trends observed in more developed countries. Is this so in Latin America? If so, is it generalized or is it confined to a few countries? What is the nature of the trend, that is, when does it begin and how does it vary by social groups? Why does this trend occur at all? How does it compare with the ones observed elsewhere?
- b) Since the total prevalence of female headed households is a result both of women's 'propensities' to head a household and the age and marital status composition of the relevant female population, observed trends in the rate of female headship may mask and

confound changes in propensities and composition. From a substantive as well as policy point of view it makes a difference if observed trends are more the result of changes in composition rather than in propensities. For instance, changes in marital status composition, such as increasing proportions of divorced women as opposed to increasing proportions of women marrying, may be related to social and economic changes that are, on the one hand, similar to more recent trends in the U.S., and, on the other, more reminiscent of U.S. trends that took place prior to the divorce revolution of the 1960s and 1970s (i.e., post-war increases in proportions marrying). Similarly, increases in 'propensity' may be indicative of larger societal changes with regard to ideology concerning family formation rules. Thus, we assess the magnitude and direction of their contribution to changes in female headship and estimate the extent to which changes in propensities and composition reinforce (or offset) each other. If there are measurable changes in total levels of female headship, what is the total contribution of changes in propensities and of changes in the age and marital status composition of the female population? Could it be the case that observed changes would have been larger (smaller) if changes in composition had been different than those observed?

c) In various accounts of the phenomenon, researchers postulate that female headedness is likely to be related to the nature of nuptiality regimes through which societies assign roles and status to males and females, to husbands and wives. We pose the question of whether differentials in nuptiality regimes observed in Latin America are a key to understanding regional contrasts in the prevalence of female headedness. In particular, we seek evidence supporting the idea that the prevalence of consensual unions in much of Central America and the Caribbean nations is at the root of higher levels of female headedness.

d) Is it possible to formulate a parsimonious but disaggregated model predicting the probability of female headedness on the basis of a few individual characteristics? We attempt to answer this question using a simple logistic model including individual and contextual effects.

II. BACKGROUND AND EXISTING EVIDENCE

a. The nature of the evidence in past research.

In 1978 Buvinic, Youssef and Von Elm published a study that brought to the fore the ‘problem’ of increasing prevalence of female headship in developing countries. In it, they argued that there was a marked growing trend in the prevalence of female headedness throughout the developing world and most importantly that the households where the phenomenon was more commonly seen were predominantly concentrated in the lower income socioeconomic strata. They also contended that living in female headed households had dire repercussions for both the women who head them and for their children. Table 1 replicates the figures of levels of female-headship for the Latin American region produced by these authors. The authors hoped that their findings would lead development planners and policy makers to address the plight of females supporting families on their own in the developing world, a group that, they argued, had been summarily ignored in traditional development strategies (Buvinic, Youssef, and Von Elm, 1978). Their study did justly manage to draw attention to this understated theme and led to numerous studies of the determinants and consequences of female-headship throughout the developing world.

By the late 1980s ‘female-headship’ in the developing world was a relatively well-known subject, notwithstanding the problematic issues it raised in terms of definitions of “headship” and of measurement of levels and time trends. The Population Council and the International Center for Research on Women co-sponsored a series of seminars during 1988 and 1989 to assess the

research that had been carried out during the 1980s. Overall, 39 studies were reviewed and discussed. The studies concurred that most female-headed households are poorer than male-headed households (or couple-headed households) in all developing regions. On the other hand, they found regional differences in the estimated effects of female headship on child welfare (Population Council/ICRW, 1988-1989).

What the workshop was unable to establish unequivocally was whether or not the prevalence of female headedness in developing countries has been following a similar trend to that observed in industrialized countries such as the United States. This impasse has as much to do with the inadequacies of the various definitions of headship as it does with the absence of longitudinal or time-series data. All the studies reviewed in the workshop consisted of analyses of cross-sectional data and were frequently limited to only one time period. Thus, the conjecture that the trend in the prevalence of female-headedness in developing countries mirrors that of developed countries is difficult to substantiate. Despite problems with its confirmation, the conjecture is appealing, as it is consistent with findings that indicate rising out-of-wedlock childbearing, increased rural-urban migration with strong sex imbalances and, most significantly, that 'modernization' has disrupted traditional family systems both in rural and urban areas, eroding social relations among kin and weakening contracts requiring income transfers from males to females and their children (Buvinic, 1991; Folbre, 1991).

b. Recasting the problem: why should we expect increases in female headship?

Although previous assessments of levels and trends of female headship have not unequivocally demonstrated the existence of an upward trend in developing countries, the issue is worth reconsidering particularly given the alleged implications of 'modernization' on family change and, in turn, the implications of family change on the well-being of women and children. If indeed the prevalence of female-headedness is on the rise, this points to important changes in

family formation throughout developing regions that may have serious consequences for the growth and development of younger generations.

The process of economic modernization in Latin America and elsewhere has undoubtedly led to the disruption of patriarchal family forms and kinship organization. As the Latin American economies modernize and urbanize, traditional forms of family subsistence disappear, leading to dependence on wages for a living, large migratory streams from rural to urban centers and the creation of a swelled informal sector. In most parts of Latin America it is young women who migrate to cities, leaving behind family and kinship networks that formerly played vital roles in family maintenance and support. In the new urban context women face a harsh reality: low wages, poor quality housing, increased risk of becoming single mothers, and the absence of family networks. In the rural context, family farms, replaced by large-scale mechanized agricultural concerns, are left risking poverty, and with family members now dependent on low wages earned as seasonal employees in the large agricultural concerns or on precarious sharecropping arrangements. This, in turn, is believed to be directly related to female and male migration and the wholesale dissolution of rural families. The overall result is the loss of kinship networks and the erosion of commitments, contracts, and exchange between family members, formerly a valuable part of the traditional patriarchal family system (Rosenhouse, 1988; Folbre, 1991).

While in some respects the 'breakdown' of the traditional patriarchal family has been a positive change for women, in other respects it has exacerbated their economic and social vulnerability. Modernization may lead to increased women's labor force participation, new possibilities for autonomy and independence, and enhancement of political rights, but it has also allowed significant reductions in males' responsibilities and narrowed their role as family protectors and providers. The changes in female roles have not been adequately accompanied by corresponding accommodation in male roles (Folbre, 1991). Women gain freedom from the

patriarchal structure but simultaneously face new obligations frequently in hostile social and economic contexts. Males, on the other hand, also gain more freedom from these new arrangements but, unlike women, do not take on but instead shed or postpone family obligations. Some researchers claim that the male's role as the main provider has been undermined and eroded as a direct consequence of unemployment, underemployment, and migration. Contemporary economic development is largely characterized by increased poverty and uneven economic growth and "robs males of jobs in agriculture and manufacturing" forcing them to abscond from their familial responsibilities (Morrissey, 1989).

These interpretations suggest that increased female headship, when and where it occurs at all, is an outcome of transformations affecting females of all ages and of all marital statuses. The phenomenon should have distinct profiles by social groups as these not only have differential access to a pool of economic and social resources but also experience disruption of traditional social relations produced by modernization to very different degrees. Overall, however, given the characteristics of modernization, such as increased female labor force participation and urbanization, we should expect to find increasing divorce and consensual union rates and rising levels of non-marital childbearing. In addition, it is likely that we encounter ideological changes in terms of family formation rules. In essence, we should find the emergence of a similar pattern of female headship in Latin America, especially in the more developed countries of the region, as that observed in the United States and other developed countries.

c. The consequences of female headship.

Under any of these interpretations women who head their own families are at a great disadvantage. Female heads take on the dual role of economic providers and family nurturers without, in most instances, the direct assistance of males or the support of traditional kinship and family networks. Female heads must make do with fewer adult earners in the household (i.e., a

greater dependency ratio), experience inferior earnings both as a result of gender discrimination in the labor market and as a consequence of the need to combine home care with economic activity, which leads many women to select jobs demanding a smaller time commitment. These jobs tend to be found mostly in the informal sector and in the lower paying service sectors (Population Council/ICRW, 1988; Buvinic, 1991, Folbre, 1991). Besides these quite general implications, we know very little about the consequences of the 'female-headed households' for the women who head them. Although there is scarcely any **direct** evidence of long-term detriment to women who head families, we assume that women are indeed adversely affected since the evidence available suggests that these households are generally poorer than couple (or male-headed) households.

In contrast, there are far more studies focussing on the implication of female-headship for children and therein our knowledge base is stronger. But the more abundant findings in this area tend to be inconsistent and do not unequivocally demonstrate negative repercussions for children in all regions. Several researchers observed that in the United States children who grow up in female-headed households suffer negative social and economic effects throughout their adult years. They experience lower educational and occupational attainment, and, for female children, higher risks of teenage pregnancy (Garfinkel and McLanahan, 1986; McLanahan and Sandefur, 1994). Studies focussing on the effects of divorce in the U.S. have consistently shown that divorce results in average drops of 30-50% in household income from pre-divorce family income and further, that these reductions are permanent (Furstenberg and Nord, 1985; Dechter, 1991; Folbre, 1991). Children from single-parent families in Europe, on the other hand, do considerably better perhaps because there is stricter enforcement of male obligations and more generous public assistance (Folbre, 1991).

Important differences are also found between the poorer regions of Africa and Latin America. Although studies carried out in Africa found female-headed households to be, on

average, poorer than male-headed households, they also reveal that children from these households fare better. Girls' education is given more importance in female than in male-headed households. Likewise, children in female-headed households do significantly better on long term measures of nutritional status (Population Council/ICRW, 1989). Some research suggests that this outcome is attributable to women who are able to distribute earnings and resources more equitably between family members and invest more in children's nutrition than male heads (Population Council/ICRW, 1989). On the other hand, findings from Latin America indicate that children in female-headed households fare considerably worse on almost all indicators chosen than children from male-headed households. Throughout the region, children of single mothers exhibit higher rates of school dropout, lower nutritional status, higher rates of labor force participation, higher mortality, and higher prevalence of school absenteeism (Onyango, Tucker, and Eisenman, 1994; Population Council/ICRW, 1989). It has been suggested that these regional differences in child outcomes are due mainly to differentials in levels of urbanization between the two regions. Female-heads in Africa are still predominantly rural, and thus may have better access to food and kinship networks. In Latin America, on the other hand, females face greater constraints as they are considerably more isolated in the more modern, urban contexts (Population Council/ICRW, 1988-1989).

In summary, three themes deserve attention. First, although we suspect that several mechanisms associated with modernization may have triggered increases in the prevalence of female headedness, the information analyzed so far offers only weak indications that such trends do indeed exist. Second, while it is thought that females heading their own households should in general be worse off, research findings have not corroborated the conjecture. Third, the evidence available indicates that the effects on children are not uniform across regions but tend to vary and appear to be a function of the social and economic context within which the rise in female

headedness takes place. In what follows, we address only the first of these themes and attempt to show that the idea of increasing female headship is largely incorrect.

d. The concept of female headship and its measurement.

As noted above, a robust assessment of levels of female-headedness in Latin America is difficult due to disagreements concerning the appropriate definition and measurement of female headship. Arguing that censuses ‘mis-diagnose’ the problem by allowing household members or enumerators to designate a household head, numerous social scientists use alternative criteria to determine what constitutes a female-headed household. Thus, in their study, Buvinic and colleagues (Buvinic et al., 1978) use a measure of “potential” female-headed households rather than a measure of “actual” female headship to bypass the complications posed by the use of censal indicators (see Table 1).¹ One of the chief difficulties of measurement has to do with the fact that census counts do not include as heads women who bear chief economic responsibility for a household but reside with adult males who are deemed heads due to definitional instructions or culturally biased enumerator decisions. This is a very likely possibility particularly when a mother and her children become part of an extended household but preserve autonomy and are neither totally nor partially dependent on resources from the household. To overcome this difficulty some researchers measure the prevalence of female headship using a “working head” definition² (Rosenhouse, 1988). But this type of adjustment requires fairly complex information about household accounting and organization which is only seldom available.

It should be noted that the downward bias in the measure of prevalence of female headship that these new adjusted definitions seem to correct is partially offset when women counted as heads reside alone only temporarily while their spouses or male partners are away and provide full or partial economic support through remittances.

In this paper we adhere to the conventional notion that what matters are differences

between households where a female is a head without the **apparent** contribution of males and those where females are part of a larger group and could **potentially** benefit from other actors' contributions. In almost all Latin American censuses, headship is attributed to women who do not live with an adult male. These women are, in fact, different from those who reside with partners even if among the latter there might be some who are effectively the main economic contributors of household income. Ostensibly, those in the former group are worse off given the permanent or transitory absence of an adult partner who could otherwise contribute to the household welfare by providing child care or other non-financial support. On the other hand, the definition may exaggerate the level of headship (and the negative consequences associated with it) if there are large numbers of female heads whose absent husbands or partners remit earnings on a regular basis or whose kinship networks are an effective source of resource flows that mitigate poverty or vulnerability.

Thus, we acknowledge that censal assessments of female headship are not well designed to identify without biases those females who are the main providers or have otherwise full responsibility for the functioning of a household. However, censal definitions do enable us to identify households that are organized around the potential authority of a female. From this point of view the most important source of bias is the inability to detect households which appear to be headed by females due to the temporary absence of male partners. Our conclusion will be uncontaminated insofar as the intertemporal or intercountry differences in the processes that generate the discrepancy are small.

An additional problematic issue is one of comparability of censal data between time and countries. Social scientists interested in the problem have pointed out that different countries use different definitions of what constitutes a household "head," changing definitions over time (Buvinic, 1991). To assess the magnitude of the problem we examined the publications of the

censuses of the countries included in this study to determine if, indeed, we could argue for comparability. We found that, in all cases, 'head of household' was defined as the person identified as such by him/herself and other household members.³ Therefore, we feel confident that comparability on this level is warranted.

III. FEMALE HEADEDNESS IN LATIN AMERICA: 1970-1990.

To assess levels and trends of female headship we use two sets of indicators. First, a crude index or the ratio of females aged 15 or older reported to be heads to all females older than 15. The second indicator is an indirectly standardized index calculated as the ratio of the observed number of female heads (O) to an expected number of female heads (E).

a. Levels and trends of the crude index of female headship.

Table 2 displays the values of the crude and indirectly standardized indices of female headship. The values attained by the crude index are always above 9 percent and below 18 percent. The index increases over time (1970-1980) in Argentina, Chile and Costa Rica and decreases or remains stationary in Colombia, the Dominican Republic, Ecuador, Panama and Paraguay. The first three countries are those that exhibit the most modern demographic regimes in Latin America--low mortality and fertility--whereas those in the second group are still undergoing important transitions in their mortality and fertility patterns. This very simple finding is in agreement with the idea that as a society modernizes there will be a trend towards an increase in female headship. However, since the propensity to be a female head increases with age and varies sharply by marital status, one may justifiably argue that the observed changes in the crude rate could be the result of changes in composition, **not** in propensities. If so, identification of the type of compositional change involved is crucial. Increasing levels of divorce may point to the effects of the processes of modernization, while increases in widowhood suggests an entirely different phenomenon.

In order to assess the relative importance of changes in composition and propensities, we partition the total changes into two parts: one associated with the contribution of propensities and the other associated with the contribution of composition by age and marital status. The first three columns of Table 3 show the estimated contribution of changes in propensities ('rate'), changes in age composition ('age') and changes in composition by marital status ('marital status').⁴ Note, first of all, that the driving force behind the changes in Argentina, Chile and Costa Rica is, in fact, the trend in rates: the increase in female headship is mostly due to an increase in the propensities or rates of female headship for all ages and marital statuses. Changes in age and marital composition work in the opposite direction (in the Argentinean and Chilean cases), namely, toward a reduction of the total rate of female headship. This is a curious pattern, very unlike that which has taken place in the United States. On the one hand, females in these countries exhibit a 'modern' proclivity for independent living arrangements, but changes in marital status composition do not exhibit similar 'modernization' trends.

But, the pattern is reversed in most of the countries of the second group: the **reduction** in female headship is predominantly due to a reduction in the propensity (rates) to be a female head while changes in composition tend, in most cases, to increase female headship. The regularity of these changes is puzzling. Why should we observe **decreases** in the rates of female headship in areas where it has remained at relatively high levels precisely during a period of time when most disruption due to modernization is occurring? While existing conjectures about female headship predict the increase observed in Argentina, Chile and Costa Rica, they do not provide leads to explain trends in the second group of countries.

b) Levels and trends of an indirectly standardized index.

Arguably, comparisons across countries and over time using the crude index are of limited utility since its observed value is influenced by each country's age and marital status composition.⁵

To bypass this limitation we propose the use of an indirectly standardized index calculated as the ratio of the observed number of females who are heads to the one we would observe if the society or country experienced age-specific rates observed in a known standard.

i. Definition of the index I.

The expression for the index is as follows:

$$I = O/E$$

where O is the observed number of female heads older than 15 and E is the expected number of female heads older than 15. O can be retrieved directly from censal figures. E is the number of female heads that one would observe if the population experienced the same rates by age observed in the standard or:

$$E = \sum_x r_{sx} F_x$$

where r_{sx} is the rate of female headship at age x in the standard population and F_x is the observed number of females aged x in the population of interest.

Some very simple algebra leads to the following equality

$$I = O/E = \sum_i (Ic_i * Ir_i)$$

where i is a subscript for marital status and Ic_i is a measure of the compositional contribution of marital status i, defined as:

$$Ic_i = \sum_x (F_{ix} * r_{sx}) / \sum_x (F_x * r_{sx}).$$

Here F_{ix} is the number of females in marital status i who are aged x and F_x is the number of females aged x. On the other hand, Ir_i is a measure of the contribution of propensities to be female heads among those in marital status i. It is defined as:

$$Ir_i = \sum_x (F_{ix} * r_{ix}) / \sum_x (F_{ix} * r_{sx})$$

where r_{ix} is the rate of female headship among women in marital status i and age x. Since the sum of Ic_i over all marital statuses ought to add up to 1, we can interpret I as a weighted average of

the marital specific propensity indices I_r .⁶

In this paper we choose as a standard the age-specific rates observed in the Dominican Republic in 1981. These rates are some of the highest observed in Latin America and provide a good baseline to contrast those observed in other countries.

Figure 1a graphs the rates by age in the Dominican Republic, 1981 and those observed in other countries/times. Although there are some differences across countries, what is surprising is the strong degree of similarity in the topography of the patterns: the rates increase steadily by age, reach a maximum between ages 55 to 65 and then decline. The increase with age is almost certainly the result of compositional changes in marital status and reduced opportunities to reside with children or other family members. The decline after the peak is probably a reflection of increased co-residence with adult children, a fairly common occurrence in Latin America.

Are these patterns peculiar to the period of time we are studying? Although we cannot answer this question for all countries, we have newly collected information for two of them, Colombia and Paraguay, which carried out several stages of the Demographic and Health Surveys (DHS). Figure 1b plots the female headship rates estimated from these data and compares them with the rates from the most recent census in each country. Note first of all that the estimates tend to decrease and that they do so more for Paraguay than Colombia where the time elapsed from the census to the survey is only 5 years. Second, the age patterns are very similar regardless of data source.

Thus, although we cannot state unequivocally that for all countries the trends and patterns observed between 1970 and 1980 were reproduced between 1980 and 1990, we have evidence for some of them that this in fact was the case.

It is important to note that the age patterns of female headship we observe in Latin America are not just found there but in Western Europe and North America as well. Figure 2

graphs these age patterns in Great Britain and the US at two different points in time. The age patterns are quite similar to each other and closely resemble those found in Latin America but show a distinct characteristic: the rates do not drop at all after reaching a peak age. This is likely to be due to the fact that neither in Europe nor in the US can one find a pattern of child-parent co-residence as one does in Latin America.

ii. The variability of the index I.

Columns 1 through 11 in Table 4 display the values of I and of its components. The last two columns of the table display the contribution to I associated with two of the five marital statuses considered, widowed and divorced or separated. The value of the index representing the observed number of female heads as a fraction of the expected is as low as .62 in Argentina, 1970 and as high as 1.22 in the Dominican Republic, 1970. The ranking of countries according to I is virtually identical to the ranking according to the crude index, as is the grouping according to time trends. I points to increases in female headship in Argentina, Chile and Costa Rica, whereas in all other countries it suggests stationarity or decline in female headship levels.

As revealed in the last two columns of the table, in most cases, more than half of the value of I is associated with the contribution of women who are widows or separated and divorced. The exception to this regularity is found in countries (Colombia, the Dominican Republic, and Paraguay) which experienced very high levels of overall female headship, particularly in the early 1970s. Women in these marital statuses are by no means a majority, as can be verified by examining their combined values of I_c . Furthermore, mortality reductions during the decades of the 1960s and 1970s, coupled with higher remarriage propensities, resulted in mild decreases in widowhood, as can be verified from the values of I_c shown in column 8. By contrast, the share of women who are divorced or separated has increased or at least remained stationary (see column 10).

We are able to identify some unexpected but quite regular patterns in the figures shown in Table 4. First, it is only among women who are widowed and separated or divorced that the index measuring propensities (I_r) increases over time. This occurs in all countries without exception. Second, the index for women who are married remains virtually stationary everywhere, whereas the index for women who are in a union or are single increases in some countries and falls in others. The countries experiencing the increases are Argentina, Chile and Costa Rica, whereas all other countries show decline or stationarity. Third, and as shown in the decomposition of changes shown in Table 5, when the index I increases over time, more than half of the increase is contributed by women who are widows; the residual being associated with changes among single women. Finally, expected changes in marital status composition are confirmed by the data. Levels of divorce/separation change very little, except in Colombia and the Dominican Republic. Likewise, noticeable increases in levels of consensual unions occur only in these two countries. More surprising however, is that the levels of consensual unions decline in Paraguay and Panama while the number of formal unions increases and divorces decrease or remains stationary in these two countries.

Thus, the observed upward trend in female headship is not a phenomenon found among all women. Quite the contrary, it seems to be confined within a very limited group since only widows and those who are divorced or separated experience increase without exception. In countries with a more modern demographic regime the upward trend also affects women who are single or in union but in countries lagging in the demographic transition these same women experience sharp decreases.

An important factor accounting for the regular increases in female headship among widows and women who are divorced or separated may result from changes in the propensity toward joint residence of elderly people and younger adults. Throughout Latin America the

propensity to co-reside with parents has decreased somewhat (Palloni et al., 1995). Since widowhood is occurring at later ages, the shift in residential preferences also translates into higher fractions of widows who live alone. This explanation can be further confirmed since the same phenomenon occurs also among widowers.

Although these transformations are part of what we expect with modernization, they are not exactly what the conjectures examined above invoke to justify expectations of higher female headship throughout the Latin American region. It is true that the increases observed in the three most modern countries among women who are single or in consensual unions is consistent with those expectations. But it is not less true that our examination of the data shows important inconsistencies, particularly in the form of downward trends in the least modernized countries.

Finally, we use these data to test an intriguing conjecture, namely, that there is an association between the prevalence of consensual unions and the total levels of female headship. Of course, some association should exist simply as a result of the fact that a higher fraction of women in consensual unions are also heads. But the idea is that the association should extend to all marital statuses: higher prevalence of consensual unions in a society should be accompanied by higher levels of female headship among women of **all** marital status. The justification for this conjecture is that in societies with high levels of consensual unions the conjugal bond is considerably weaker and of lesser relevance for decision making pertaining to residential arrangements than in other societies. If everything else is held constant (particularly the overall propensity to live in with relatives), women in these societies will be more likely to live unaccompanied by a male partner regardless of marital status.

Table 6 and Figures 3a and 3b document only tenuous evidence that this conjecture is correct. Table 6 shows the results of simple linear regressions relating the indices I_r and the combination of I_c for single women and women in unions.⁷ Figures 3a and 3b graph the values of

I and I_r for widows and divorced (or separated) women against the index I_c assessing the prevalence of women who are single and in consensual unions. The relation with the index I is not tight though it is in the expected direction. About half of the variance of I is explained jointly by the prevalence of women in consensual unions or single. However, the association is considerably weaker for the propensity indices corresponding to each marital status separately. Thus, for example, the combined prevalence of women who are single or in consensual unions explains less than 20 percent and as little as .4 percent of the variability in the levels of headship among the various marital statuses. The idea that nuptiality regimes and female headship are related is an interesting and suggestive idea, but it is unlikely that one can shed more light on it without independent information on propensities toward family or household arrangements.

IV. SIMPLE MODELS OF FEMALE HEADEDNESS

The description with an indirectly standardized index is far more useful than the one based on a crude index, but it is still of limited reach. Indeed, changes in the index are a result of changes in propensities in different social groups and of shifts in the composition of the population by social groups. For example, differential propensities to be a female head in rural versus urban regions and changes in the composition of the population by rural and urban residence may exert considerable influence on the values of the indirectly standardized index. The nature of these changes is completely masked in the analysis presented above, despite the fact that it turns out to be of substantive importance since the conjectures about increasing prevalence of female headship directly alludes to rural-urban migration and generalized erosion of the traditional economy as factors behind observed trends in female headship. In order to identify these changes it would be necessary to calculate the indices for each social group we believe relevant. This can become a tedious and cumbersome exercise. An alternative is to model the individual probabilities of being a female head as a function of selected characteristics. We pursue this idea

in the sections that follow.

a. Formulation of a logit model.

Since the values of the female headship rates really correspond to probabilities attaining values within the (0,1) interval, we formulate a model for their logit transformation:

$$\theta_x = \alpha + \beta * \theta_{sx}$$

where θ_x is the logit of the observed probabilities of being a female head at age x and θ_{sx} is the logit of a chosen set of standard probabilities of being a female head in the same age group. As we did above, we select the age-specific observed probabilities of being a head in the Dominican Republic in 1981 as a standard pattern. Using a ‘standard’ set of probabilities is a parsimonious way of modelling age effects and takes advantage of the close similarity of age patterns of female headship across countries. The parameters α and β change the level of the standard probabilities in two very different ways. An increase in α (above 0) leads to higher values of the probabilities at all ages but much more so at older than at younger ages. On the other hand, an increase in β (above 1.0) reduces the probabilities by approximately the same amount at all ages. The opposite occurs when α decreases below 0 and β decreases below 1. These effects are graphically illustrated in Figure 4.⁸

We model the effects of the following covariates: marital status, educational level, poverty and, finally, rural-urban residence. All of them are assumed to affect the value of α but not the value of β .^{9,10}

b. Examination of results.

The models that we estimate fit the data quite well. Although we pursued a variety of strategies to check the degree of fit, we only discuss one which attempts to determine the consistency between observed female headship status for a female and predicted status. The model fits better when the proportion of ‘cases’ correctly identified is larger and when the fraction

of ‘non-cases’ incorrectly classified as ‘cases’ is smaller. Table 7 displays the ratios of predicted to observed ‘cases’ for all the countries and years. The figures under the ‘sensitivity’ heading refer to the proportion of ‘cases’ correctly identified as heads, i.e., the ratio of predicted to observed female heads. Similarly, the figures under the ‘specificity’ heading refer to the proportion of non-heads correctly predicted as non-heads. ROC indicates the correlation between the model’s specificity and sensitivity. The figures presented in Table 7 all suggest the models fit the data quite well.

The set of estimated regression coefficients (not shown) permits us to identify three important patterns. The first is that there is a remarkable similarity across countries in the estimated effects of marital status: not only do the signs correspond to the expected ones--widows and divorced or separated women have higher probabilities of being heads, followed closely by single women and women in unions--but the size of the effects exhibits impressively small variance across countries. This is shown in the one-way graph displayed in Figure 5a. The graph displays a box plot containing estimated effects of the dummy variables reflecting marital status. The center of each box is the median effect, so as the box moves to the right of the graph the larger the estimated median effect should be. The length of the box reflects the interquartile range of the estimated effects. The longer the box, the higher the intercountry heterogeneity of estimated effects.

The second pattern is that the effects of education go in the direction opposite to the expected one: in all countries and years (except the Dominican Republic and Paraguay) women with less education tend to be less likely to be female heads. The effects of poverty, on the other hand, are as expected and women who score worse in the poverty indicator are more likely to be heads in all countries. Since measures of poverty and education are likely to be correlated, the net effects of education are difficult to interpret. But our results suggest that the relations are not as

straightforward as expected. We may conjecture that education is a proxy for traditional versus modern family structure, and then interpret the lower probabilities among the less educated to be the result of a more traditional familial context in which single mothers reside with extended family. On the other hand, increased levels of poverty may check the ability of women and their kin to co-reside. Figures 5b and 5c show that, unlike the effects of marital status, those attributable to education and poverty are less homogeneous across countries. However, despite this increase in the variance of the estimates, the patterns of effects are remarkably similar.

The third pattern is related to the effects of rural-urban residence (See Figure 5d). By all accounts, women in urban areas should be experiencing the brunt of the dislocations triggered by modernization and should be the ones exhibiting higher probabilities of being heads. The conjecture is partially confirmed as ten of fourteen estimated coefficients are properly (positively) signed. As occurs with the effects of marital status, the magnitude of these properly signed coefficients is quite similar across countries.

Finally, note that, as shown in Figures 5e and 5f, the intercountry heterogeneity pertaining to the effects of α and β is of relatively minor importance. This, once again, confirms the similarity of the age patterns of female headship.

The estimates we obtain suggest an important pattern, namely, that the order of magnitude of effects associated with marital status completely overwhelms those associated with the other characteristics. This is illustrated in Figure 6 which displays predicted values for women with alternative configurations of characteristics. The various curves show predicted values that are obtained after changing one and only one characteristic: marital status from married to divorced or separated; poverty from well-off to poor; and education from well educated to minimally educated. It is quite apparent that the effects of marital status dwarfs all others.

c. Decomposition of change as a function of selected characteristics.

In this section we examine once again, but in a slightly different way, the contribution of propensities and population composition to change in the probability of being a female head. We use the logit models described above to predict the probability of being a female head as a function of the standard of age, marital status, education, poverty and urban-rural residential status. The decomposition of change in the estimated probabilities of headship between the two time periods allows us to gauge the effects of each characteristic separately. This method entails substituting the coefficients of one period with those of the other to estimate change in propensities and alternatively substituting the means of the dummies included in the models to estimate the effects of change in population composition. Change over time is expressed as follows:

$$P_2(a,b,c,d,e)-P_1(A,B,C,D,E) = \delta\text{-effects} + \phi\text{-effects} + \mu\text{-effects}$$

where δ -effects refer to the effects of changes over time in the composition of the population by marital status, education, poverty, and urban/rural residence, the ϕ -effects refers to the effects of changes over time in the estimated coefficients of marital status, education, poverty and urban/rural composition and, finally, the μ -effects refers to the effects of changes over time in the constants α and β (Das Gupta, 1993).¹¹

$P_1(A,B,C,D,E)$ and $P_2(a,b,c,d,e)$, alternatively, express the probability at t_1 and the probability at t_2 standardized to reflect the population composition or propensities estimated at t_2 , where

$$P_i = e^{\alpha + \sum \beta x} / 1 + e^{\alpha + \sum \beta x} .$$

Appendix A lists the results of the decompositions carried out separately for three age groups, 20-25, 40-45, and 60-65. The patterns in propensity and composition effects by country differ somewhat from those produced by the decomposition of the crude and indirectly

standardized indices. With the coefficients of t_2 , estimated probabilities of being a head at t_1 are higher in Chile, Costa Rica, Colombia, Panama, and Paraguay. On the other hand, they are lower in Argentina, the Dominican Republic, and Ecuador. Recall that the results of the first two decomposition exercises indicated that increases due to propensities were limited to Argentina, Chile, and Costa Rica and that the remaining countries experienced decreases. A mixed pattern is also evident in terms of the effects of population composition. In this case, countries exhibiting decreases are Chile, Costa Rica, Colombia, Paraguay and the Dominican Republic, while those exhibiting increases due to change in composition are Argentina, Ecuador and Panama. Nevertheless, some patterns persist even though this last exercise is controlling for socioeconomic factors not included in the previous two exercises: women's education, poverty and urban/rural residential status.

First, the 'propensity' to head is strongly and positively affected by marital status in all countries. In all cases, except in Argentina, the overall probability of being a female head would have been greater than observed at t_1 had women demonstrated the same headship propensities ('coefficients') by marital status as those of t_2 . Second, propensities by marital status dwarf those of all the other characteristics except in the Dominican Republic where education and urban/rural status have the greatest effects and in Chile where the effects of urban/rural status are greater than those of marital status. These changes are a function of reduced propensities at all educational levels and in urban areas in the Dominican Republic, and a considerable increase in propensity in urban areas in Chile.

Compositional effects are in general of more modest magnitudes in all countries. This indicates that, with few exceptions, population composition by the selected characteristics did not change much between the two time periods.

These findings, coupled with those produced by the examination of the indirectly

standardized index, have important implications for the prospective prevalence of female headship. First, in all Latin American countries, women who have experienced some time in formal unions are the ones exhibiting the greatest propensities to head their own households, not single women or women in consensual unions. Second, the compositional changes in marital status that have taken place in the United States and other industrialized countries do not appear to be repeating themselves in the Latin American region. In fact, in the least developed countries, Paraguay for example, divorce appears to be on a downward trend and formal unions on an upward one. Thus, it is only if Latin American marital disruption follows a similar path as that evidenced in the United States that female headship will mount given increasing propensity to head within this marital status. If this is so, the expansion of female headship in the continent will occur through a route that is quite different from the ones identified by extant theories and conjectures.

V. HOUSEHOLD COMPOSITION

In this final section we briefly review the distribution of headship status by household composition. Given that a main concern behind a rising prevalence of female headship is poverty, attributable mainly to the absence of a working age male, an examination of the type of households in which female heads reside is indispensable. Appendix B displays the distributions of living arrangements by headship status.¹² The figures reveal that the proportion of female heads living in extended family households ranges from 31% to 45% and the proportion living in composite households from 8.4% to 19.3%, suggesting that a considerable number of female heads in all countries reside with other relatives and non-relatives. However, these living arrangement patterns are not very different from those observed for non-heads. In fact, a greater proportion of non-heads reside in composite households (with a range of 11% to 30%).

To explore the relationship between living arrangements and headship status more

precisely, we estimate multinomial logit models to predict the effects of headship status on household type. The models take the following form:

$$\lambda_i = \alpha + \beta_i * X_i,$$

where $\lambda_i = \log(p(y_i)/p(y_j))$ = the log of the probability of residing in a particular type of household as opposed to another, and $\beta_i X_i$ refer to the explanatory variables and their coefficients. In this case, X_i are headship status (head=1), education, poverty and urban/rural residential status.¹³

Table 8 shows the relative risks of residing in extended and composite type households as opposed to residing in nuclear households: $P(y=i|X_i)/P(y=base|X_i)$, where i =extended and composite, and $base$ =nuclear. A definite pattern is apparent in the ranking of relative risks by country. Argentina, Chile, and Costa Rica exhibit the highest risks among female heads to reside in extended family and composite family as opposed to nuclear family households. This pattern holds for both time periods. These countries are the most modernized in Latin America and also exhibit more modern or westernized family distributions. That female heads in these countries are more likely than non-heads to reside in extended or composite family households is puzzling, since one would expect the risks to be higher in the poorer, more traditional countries.

A second pattern concerns all countries and time periods. With one exception (Dominican Republic, 1970), female heads with the lowest educational levels have the highest risks of residing in an extended family household. On the other hand, with two exceptions (Ecuador, 1974 and 1982), those exhibiting the lowest poverty levels also exhibit the lowest risks. At first glance, these patterns seem contradictory, but if we interpret education as an indicator of social class (or as a gradient of traditional--modern social structure) we can perceive the relationship of education to living arrangements as indicative of greater access by female heads in the lower or more traditional social classes to kin. Likewise, if we interpret the poverty indicator (which is a housing quality scale) as indicative of current economic situation, we can deduce that the poorest female

heads, i.e., those living in the poorest quality housing, face economic constraints that prevent them from incorporating other relatives into their households. Proponents of exchange theory propose that “to be viable, extended family arrangements require exchange and, hence, may dissolve under abject poverty that precludes systematic exchanges” (Palloni and De Vos, 1992).

A final pattern uncovered with the multinomial logit regressions is that in all cases, except Chile, 1970 and 1982, female heads residing in urban areas face greater risks of living in extended family households. Again, this is a puzzling finding. One would expect that female heads in urban areas have less access to kin as opposed to those living in rural areas. However, urban heads may be better able, economically, to incorporate kin into their households than rural heads.

VI. CONCLUSION

The idea that the breakup of the traditional family, the advent of massive rural-urban migratory flows and the disruptions produced by rapid urbanization and industrialization could lead to increases in female headship in developing countries just as it has done in developed countries is a plausible one. What we show in this paper is that the data available does not support this idea, at least in the Latin American context. In the aftermath of the period of most active economic growth and of unprecedented changes in demographic characteristics, we find that female headship increases by a small amount in three countries but declines or remains invariant just about everywhere else. We further find that the routes to increasing levels of female headship in the region are quite distinct from that followed in more industrialized countries, such as the United States.

The analysis also reveals that despite some differences across countries, there are remarkable similarities in the age patterns and levels of female headship as well as in the patterns of effects of important characteristics such as marital status, education of the woman, poverty level and urban-rural residence. By the same token, the residential arrangements of female heads

are quite uniform across countries, although we identify a surprisingly high fraction of female-headed households that are composite or extended rather than nuclear.

Our data reveal that there is an increased tendency for widows and divorced women to head their own household. If this characteristic remained invariant in years to come we will see a large increase in the total proportion of female heads as the population ages and as marriage disruptions become more prevalent. The increase, however, will not come from the ranks of younger women who are unmarried or in consensual unions, but from among those who are older and who have experienced some time within a marriage.

REFERENCES

- Arias, Elizabeth and Susan De Vos. 1996. "Using housing items to indicate socioeconomic status: Latin America." *Social Indicators Research*, (forthcoming).
- Bennett, Neil G., David E. Bloom, and Cynthia K. Miller. 1995. "The influence of nonmarital childbearing on the formation of first marriages." *Demography*, Vol. 32(1).
- Bennett, Neil. G., David E. Bloom, and Patricia Craig. 1989. "The Divergence of Black and White Marriage Patterns." *American Journal of Sociology*, Vol. 95.
- Bumpass, Larry and R. Kelly Raley. 1995. "Redefining single-parent families: cohabitation and changing family." *Demography*, Vol. 32(1).
- Burch, Thomas K., Shiva S. Halli, Ashok K. Madan, Kausar Thomas, and Lokky Wai. 1987. "Measures of household composition and headship based on aggregate routine census data." In John Bongaarts, Thomas Burch, and Kenneth Wachter, eds. *Family Demography: Methods and their Application*. Oxford: Clarendon Press.
- Buvinic, Mayra, Nadia H. Youssef and Barbara Von Elm. 1978. "Women-headed households: the ignored factor in development planning." Washington, D.C.: International Center for Research on Women.
- Buvinic, Mayra. 1991. "The vulnerability of households headed by women: policy questions and options for Latin America and the Caribbean." Economic Commission for Latin America and the Caribbean, United Nations.
- Coale, Ansley J. 1986. "The decline of fertility in Europe since the 18th century as a chapter in demographic history." In Ansley J. Coale and Susan Cotts Watkins, eds. *The Decline of Fertility in Europe*. Princeton: Princeton Univ. Press.
- Das Gupta, Prithwis. 1993. *Standardization and Decomposition of Rates: A User's Manual*. Current Population Reports, Series P23-186. Washington, D.C.: Bureau of the Census.
- Dechter, Aimee R. 1991. "The economic effects of marital dissolution for married women." (Preliminary draft of forthcoming publication)
- Folbre, Nancy. 1991. "Women on their own: global patterns of female headship." in Rita S. Gallin and Anne Ferguson eds. *The Women and International Development Annual*, Vol.2. Boulder CO: Westview Press.
- Furstenberg, Frank F. and Christine Winquist Nord. 1985. "Parenting apart: patterns of childrearing after marital disruption." *Journal of Marriage and the Family*, November.
- Fussell, Elizabeth and Alberto Palloni. 1995. "Women's Socioeconomic Status and Nuptiality Regimes in Latin America" Paper presented at the PAA meeting, San Francisco, 1995, April 6-8.

- Garfinkel, Irwin and Sara McLanahan. 1986. *Single Mothers and their Children: A New American Dilemma*. Washington, D.C.: Urban Institute Press.
- McLanahan, Sara and Gary Sandefur. 1994. *Growing Up with a Single Parent: What Hurts, What Helps*. Cambridge: Harvard University Press.
- Morrissey, Marietta. 1989. "Female-headed households in Latin America and the Caribbean." *Sociological Spectrum*, Vol. 9.
- Onyango, A., K. Tucker, and T. Eisenman. 1994. "Household headship and child nutrition: a case study in Western Kenya." *Social Science and Medicine*, Vol39(12).
- Palloni, Alberto and Susan De Vos. 1992. "The Changing Household in Latin America." Proposal to Department of Health and Human Services Public Health Service.
- Palloni, Alberto, Susan De Vos, Elizabeth Arias, Beth Fussell, and Hantamalala Rafalimanana. 1995. "Changes in families and households in Latin America, 1970-1990." (forthcoming).
- Population Council/International Center for Research on Women. 1988-1989. "The determinants and consequences of female-headed households." Notes from Seminars I, II, III, IV. Washington, D.C.: Population Council.
- Rosenhouse, Sandra. 1988. "Identifying the poor. Is 'headship' a useful concept?" Washington, D.C.: The World Bank.
- Wojtkiewicz, Roger A., Sara S. McLanahan and Irwin Garfinkel. 1990. "The growth of families headed by women: 1950-1980." *Demography*, Vol. 27(1).

Table 1. Ranking of “Potential” Female Heads of Households in Latin America, 1970s

| Low (10-14%) | Low-Medium (15-19%) | High-Medium (20-24%) | High (25% and over) |
|-----------------|------------------------|-------------------------|------------------------|
| Argentina | Bolivia | Guatemala | El Salvador |
| Costa Rica | Brazil | Honduras | Panama |
| Ecuador | Chile | | |
| Mexico | Colombia | | |
| Paraguay | Nicaragua | | |
| Surinam | Cuba | | |
| Venezuela | Puerto Rico | | |

Source: Buvinic, Youssef, and Von Elm, 1978.

Table 2. Crude and Indirect Indices of Female Headship by Country and Census Year

| Country, Year | Crude Rate (in 100) | I=O/E |
|--------------------|---------------------|-------|
| Argentina | | |
| 1970 | 12.1 | .617 |
| 1981 | 13.7 | .721 |
| Brazil | | |
| 1980 | 11.6 | .745 |
| Chile | | |
| 1970 | 12.6 | .720 |
| 1982 | 13.6 | .800 |
| Colombia | | |
| 1973 | 16.9 | 1.102 |
| 1985 | 13.7 | .900 |
| Costa Rica | | |
| 1973 | 10.3 | .689 |
| 1984 | 11.6 | .757 |
| Dominican Republic | | |
| 1970 | 17.6 | 1.221 |
| 1981 | 14.4 | 1.000 |
| Ecuador | | |
| 1974 | 11.4 | .736 |
| 1982 | 10.8 | .683 |
| Guatemala | | |
| 1981 | 9.5 | .646 |
| Mexico | | |
| 1970 | 10.5 | .688 |
| Panama | | |
| 1970 | 14.6 | .934 |
| 1980 | 14.7 | .927 |
| Paraguay | | |
| 1972 | 14.7 | .907 |
| 1982 | 11.6 | .732 |
| Venezuela | | |
| 1981 | 13.8 | .928 |

Source: Census microfiles and DHS files.

I is calculated using the rates in the Dominican Republic, 1981 as the standard.

Table 3. Decomposition of Crude Rates Components (in 1,000)

| | Rate Effects | Age Composition | Marital Status Composition | Total Difference | Total(as % of Initial Rate) |
|-----------|--------------|-----------------|----------------------------|------------------|-----------------------------|
| Argentina | -2.1 | 0.3 | 0.1 | -1.7 | 14.1(↑) |
| Chile | -1.6 | 0.3 | 0.2 | -1.0 | 7.9(↑) |
| Colombia | 3.8 | -0.3 | -0.8 | 2.6 | 16.0(↓) |
| C. Rica | -0.6 | -0.2 | -0.4 | -1.3 | 12.6(↑) |
| D. Rep. | 4.6 | -0.0 | -1.4 | 3.1 | 17.6(↓) |
| Ecuador | -0.0 | 0.0 | 0.7 | 0.7 | 6.1(↑) |
| Panama | -0.6 | -0.1 | 0.7 | -0.1 | 0.7(≡) |
| Paraguay | 1.8 | 0.3 | 1.0 | 3.1 | 21.1(↓) |

Source: Census microfiles

↑=increase; ↓=decrease; ≡=no change.

Table 4. Indirectly Standardized Rates

| C/Y | Total | Marriage | | Union | | Single | | Widowhood | | Sep/Divorce | | % Index due to | |
|--------|-------|----------|-----|-------|------|--------|------|-----------|------|-------------|------|----------------|-------|
| | | Ic | Ir | Ic | Ir | Ic | Ir | Ic | Ir | Ic | Ir | Widow | W,S,D |
| Arg,70 | .62 | .58 | .17 | .05 | .34 | .15 | .97 | .20 | 1.50 | .02 | 2.55 | .48 | .57 |
| Arg,81 | .72 | .56 | .24 | .07 | .53 | .14 | 1.09 | .20 | 1.61 | .03 | 2.56 | .45 | .55 |
| Bra,80 | .75 | .55 | .01 | .07 | .09 | .14 | 1.33 | .18 | 1.89 | .05 | 3.50 | .45 | .69 |
| Chi,70 | .72 | .53 | .33 | .03 | .46 | .18 | .80 | .19 | 1.53 | .04 | 2.19 | .40 | .53 |
| Chi,82 | .80 | .56 | .30 | .04 | .60 | .18 | 1.05 | .18 | 1.70 | .05 | 2.52 | .38 | .54 |
| Col,73 | 1.10 | .48 | .75 | .09 | 1.20 | .21 | 1.20 | .18 | 1.63 | .03 | 2.63 | .27 | .34 |
| Col,85 | .90 | .45 | .31 | .13 | .71 | .18 | .99 | .17 | 1.76 | .07 | 2.56 | .33 | .53 |
| Crc,73 | .69 | .56 | .24 | .08 | .36 | .21 | 1.02 | .13 | 1.65 | .04 | 2.54 | .31 | .46 |
| Crc,84 | .76 | .53 | .15 | .09 | .37 | .19 | 1.22 | .12 | 1.70 | .06 | 3.08 | .27 | .51 |
| Drp,70 | 1.22 | .37 | .62 | .24 | 1.00 | .22 | 2.00 | .12 | 1.70 | .04 | 2.45 | .17 | .25 |
| Drp,81 | 1.00 | .33 | .28 | .27 | .35 | .14 | 1.36 | .15 | 1.95 | .11 | 2.87 | .29 | .61 |
| Ecu,74 | .74 | .49 | .40 | .13 | .44 | .17 | .88 | .14 | 1.59 | .04 | 2.18 | .30 | .42 |
| Ecu,82 | .68 | .49 | .36 | .14 | .43 | .18 | .89 | .11 | 1.63 | .04 | 2.36 | .26 | .40 |
| Gua,81 | .65 | .39 | .20 | .28 | .20 | .10 | .88 | .18 | 1.75 | .05 | 2.37 | .48 | .67 |
| Mex,70 | .69 | .58 | .28 | .09 | .58 | .12 | .69 | .16 | 1.64 | .04 | 3.18 | .38 | .55 |
| Par,72 | .91 | .48 | .30 | .11 | .60 | .27 | 1.59 | .12 | 1.77 | .02 | 2.50 | .23 | .29 |
| Par,82 | .73 | .52 | .18 | .10 | .26 | .23 | 1.45 | .11 | 1.81 | .02 | 2.64 | .27 | .35 |
| Pan,70 | .93 | .33 | .31 | .27 | .46 | .11 | 1.18 | .14 | 1.51 | .14 | 2.48 | .23 | .60 |
| Pan,80 | .93 | .35 | .31 | .26 | .45 | .13 | 1.27 | .13 | 2.66 | .13 | 2.66 | .37 | .74 |
| Ven,81 | .93 | .37 | .23 | .21 | .60 | .21 | 1.37 | .12 | 1.67 | .08 | 3.01 | .22 | .47 |

Source: Census Microfiles

W,S,D=Widowed and Separated/Divorced.

Table 5. Contribution of Each ($I_{c_j} * I_{r_j}(t) - I_{c_j} * I_{r_j}(t+k)$) to the Total Difference in the Index

| | T.D. | Marriage | Union | Difference due to Components | | |
|------------|------|----------|-------|------------------------------|---------|---------|
| | | | | Single | Widowed | Sep/Div |
| Argentina | -.10 | -.036 | -.022 | -.007 | -.022 | -.026 |
| Chile | -.08 | .007 | -.010 | -.050 | -.015 | -.038 |
| Colombia | .20 | .221 | .016 | .074 | -.006 | -.100 |
| Costa Rica | -.07 | .055 | -.005 | -.018 | .011 | -.080 |
| D.R. | .22 | .137 | .146 | .250 | -.089 | -.220 |
| Ecuador | .06 | .020 | -.003 | -.011 | .043 | -.007 |
| Panama | .00 | -.006 | .007 | -.035 | -.134 | .004 |
| Paraguay | .18 | .050 | .040 | .096 | .013 | -.003 |

Source: Census Microfiles

Table 6. Relation Between Ic (Consensual), Ic (Single) and Levels of Ir.

| | Dependent Variable | | | | I |
|-----------------|--------------------|------------|-------------|-------------|-----------|
| | Ir(married) | Ir(union) | Ir(sep/div) | Ir(widowed) | |
| Ic (consensual) | .35(.44) | .17(.71) | .14(.85) | 1.37(.71) | 1.27(.37) |
| Ic (single) | 1.09(.84) | 2.10(1.35) | -.23(1.63) | .28(1.35) | 1.97(.72) |
| Constant | .075(.18) | .13(.29) | 2.61(.35) | 1.48(.29) | .304(.16) |
| R ² | .10 | .14 | .004 | .20 | .47 |

Source: Census Microfiles

Table 7. Model Sensitivity and Specification

| Country/time | Sensitivity | Specificity | ROC |
|--------------|-------------|-------------|-------|
| | % | % | % |
| Argentina | | | |
| 1970 | 44.72 | 94.78 | 86.34 |
| 1981 | 48.17 | 94.02 | 84.78 |
| Chile | | | |
| 1970 | 39.19 | 95.16 | 83.35 |
| 1982 | 47.28 | 95.78 | 85.93 |
| Colombia | | | |
| 1973 | 25.38 | 95.85 | 77.11 |
| 1985 | 45.11 | 95.84 | 86.36 |
| Costa Rica | | | |
| 1973 | 39.17 | 97.12 | 87.70 |
| 1984 | 49.90 | 96.45 | 90.62 |
| D. Republic | | | |
| 1970 | 36.20 | 95.34 | 81.83 |
| 1981 | 54.15 | 95.95 | 87.95 |
| Ecuador | | | |
| 1974 | 33.53 | 96.68 | 80.60 |
| 1982 | 34.20 | 97.23 | 70.68 |
| Panama | | | |
| 1970 | 45.79 | 94.86 | 85.38 |
| 1980 | 47.91 | 95.08 | 85.14 |
| Paraguay | | | |
| 1972 | 45.62 | 95.16 | 86.41 |
| 1982 | 50.80 | 96.15 | 89.54 |

Source: Census Microfiles

Table 8. Relative Risk Ratios of Living Arrangements (Base Category is Nuclear Family)

| Country/Year | Extended Family | Composite Family |
|--------------|-----------------|------------------|
| Argentina | | |
| 70 | 1.46 | 1.32 |
| 81 | 1.48 | 1.45 |
| Chile | | |
| 70 | 1.28 | 1.03 |
| 82 | 1.29 | 1.14 |
| Colombia | | |
| 73 | 1.13 | 1.63 |
| 85 | 1.12 | .84 |
| Costa Rica | | |
| 73 | 1.39 | 1.09 |
| 84 | 1.48 | 1.12 |
| D. Republic | | |
| 70 | 1.03 | .67 |
| 81 | 1.27 | .97 |
| Ecuador | | |
| 74 | 1.01 | .65 |
| 82 | 1.09 | .83 |
| Panama | | |
| 70 | 1.17 | .79 |
| 80 | 1.11 | .92 |
| Paraguay | | |
| 72 | 1.26 | .75 |
| 82 | 1.39 | 1.01 |

Source: Census microfiles

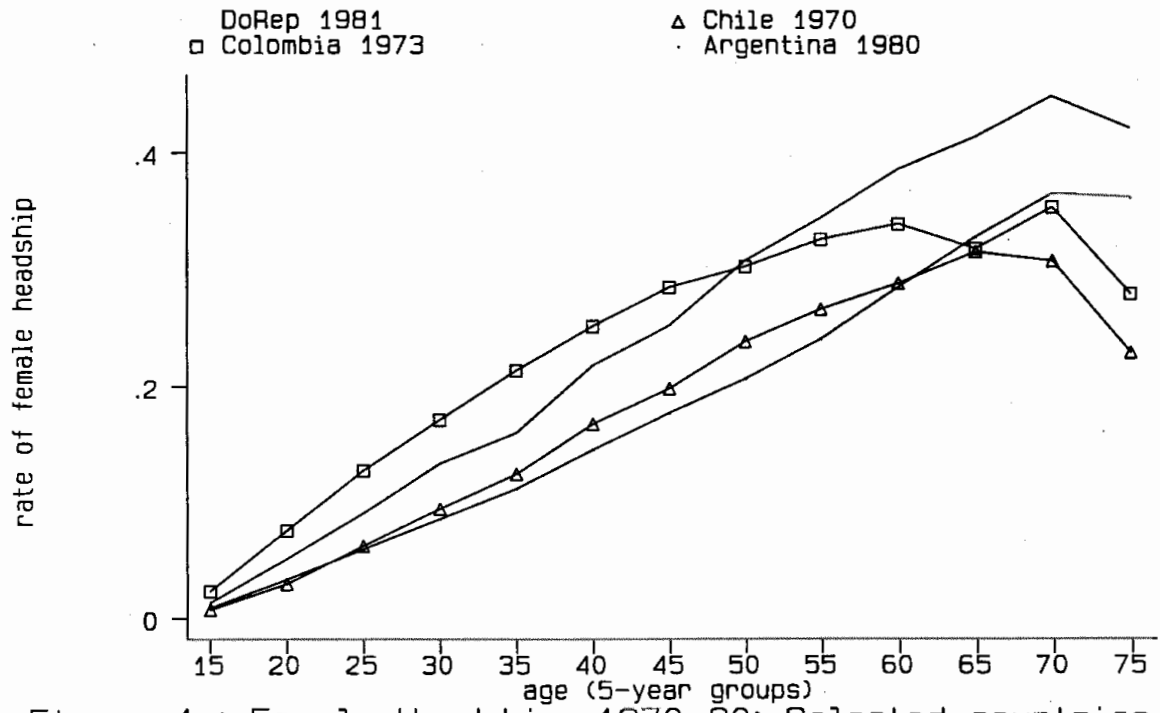


Figure 1a: Female Headship, 1970-80: Selected countries

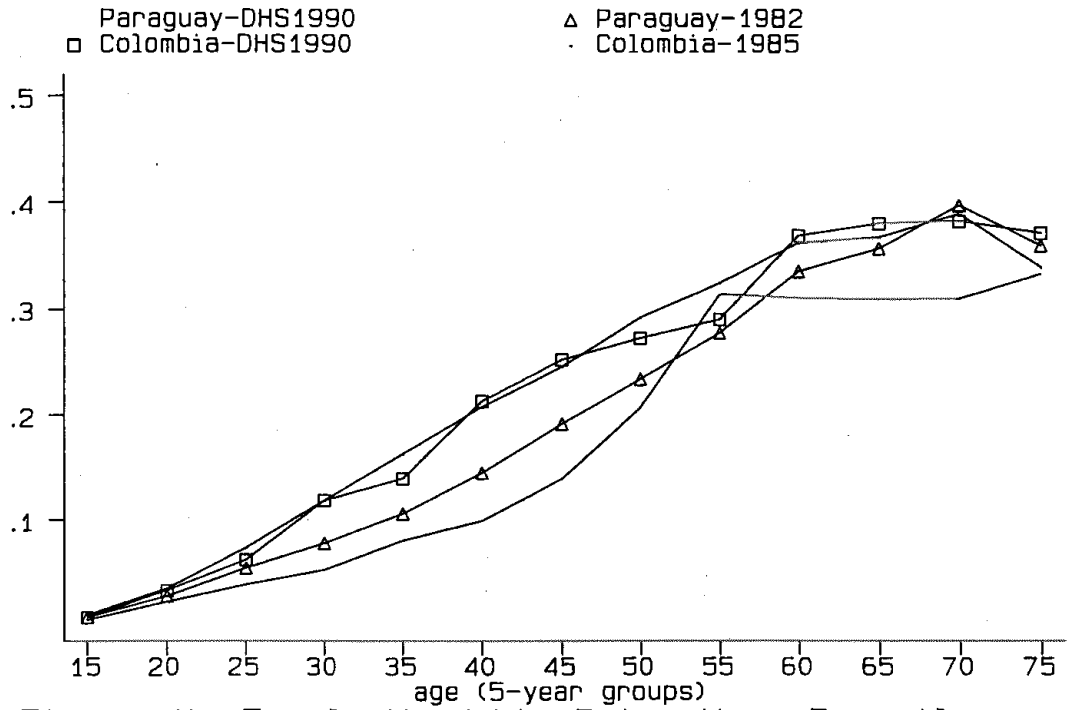


Figure 1b: Female Headship Rates Very Recently

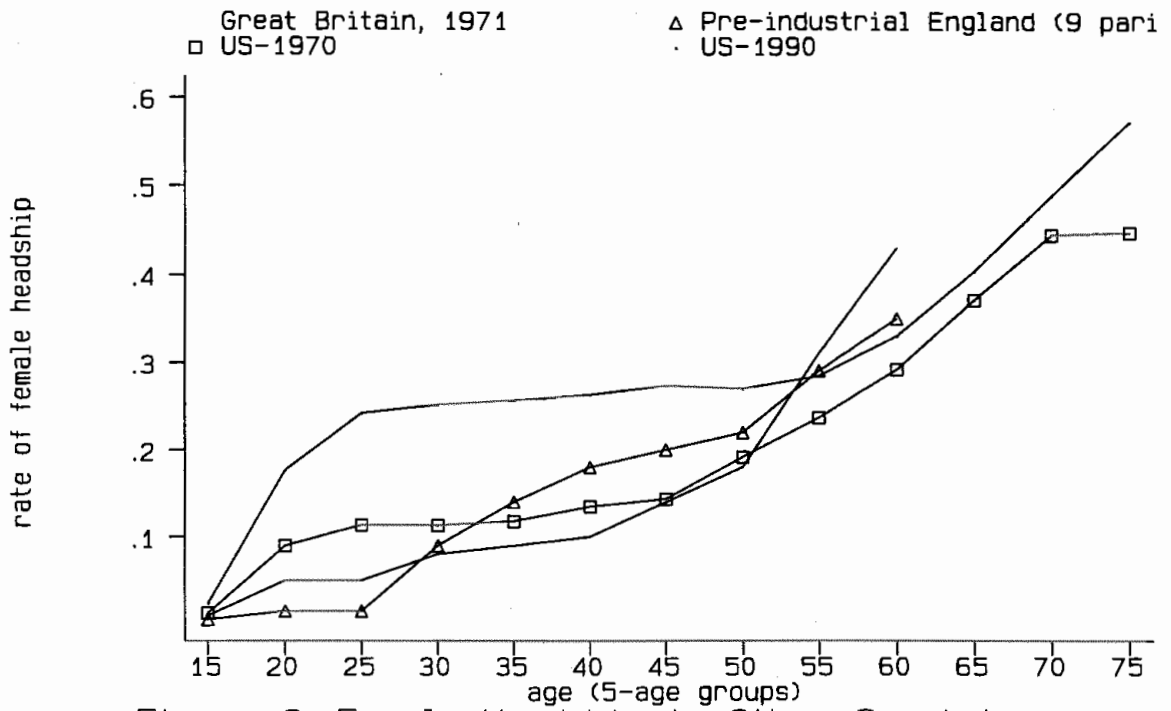


Figure 2: Female Headship in Other Countries

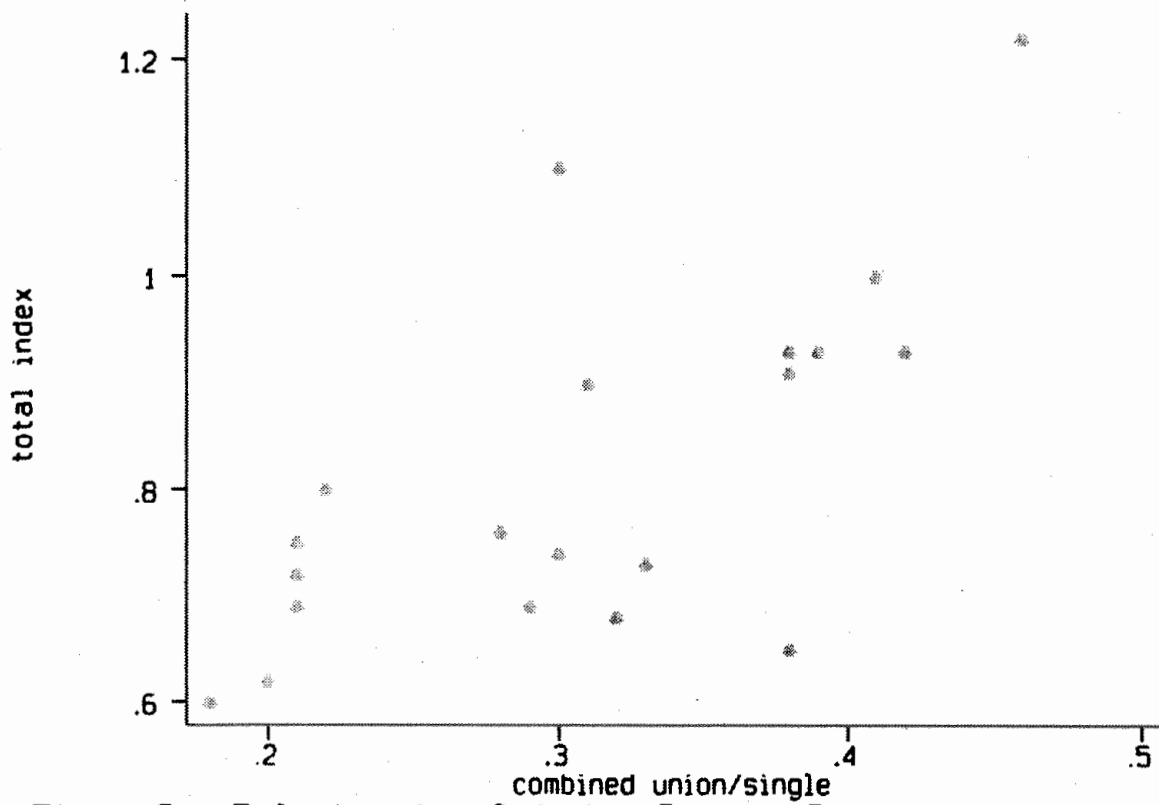


Figure3a: Relation total index<I> and Ic<unions+single>

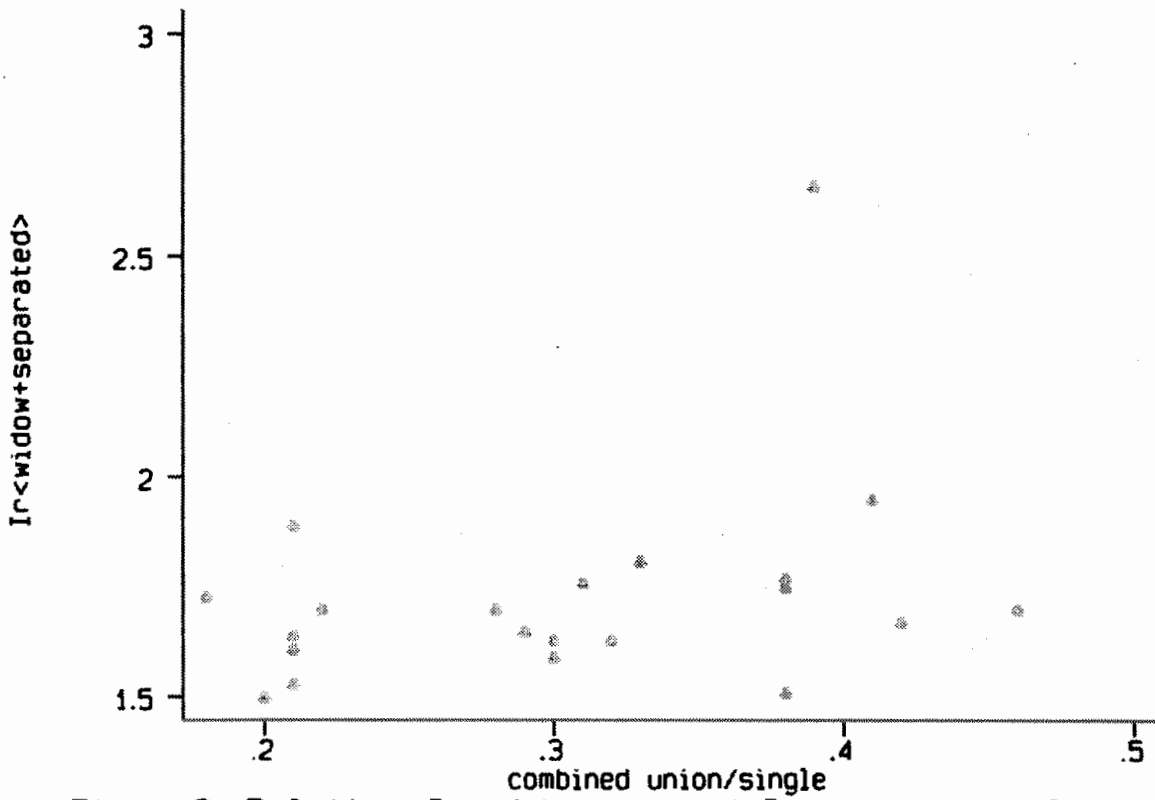


Figure3b:Relation Ir<wid.+sep.>and Ic<unions+single>

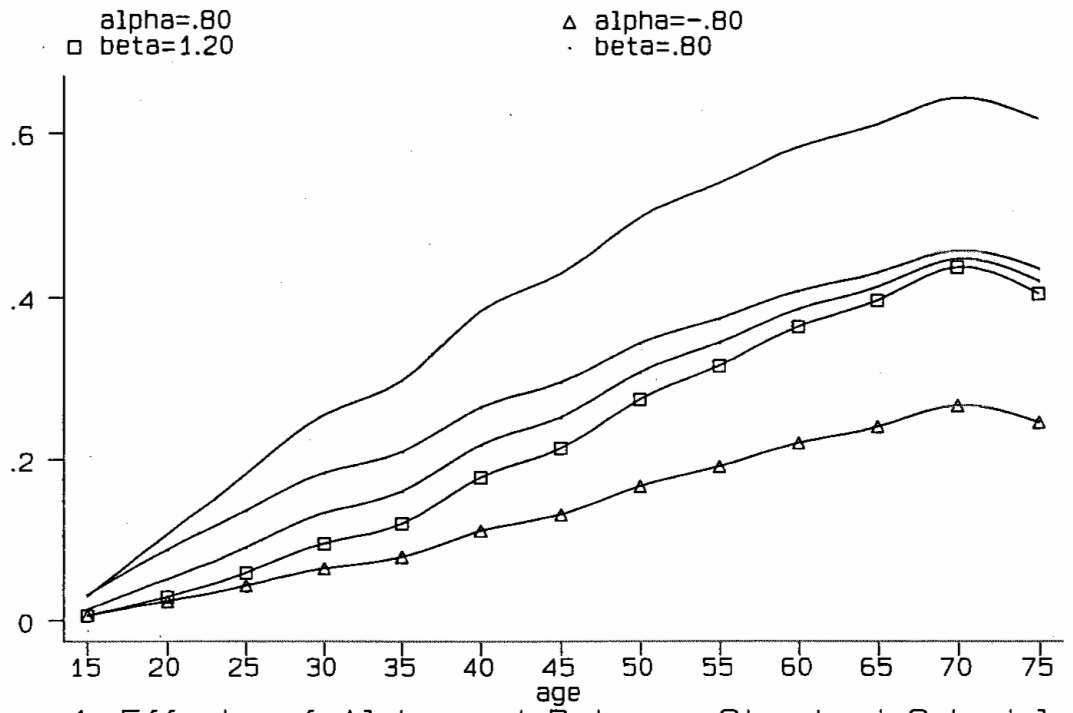


Figure 4: Effects of Alpha and Beta on Standard Schedule

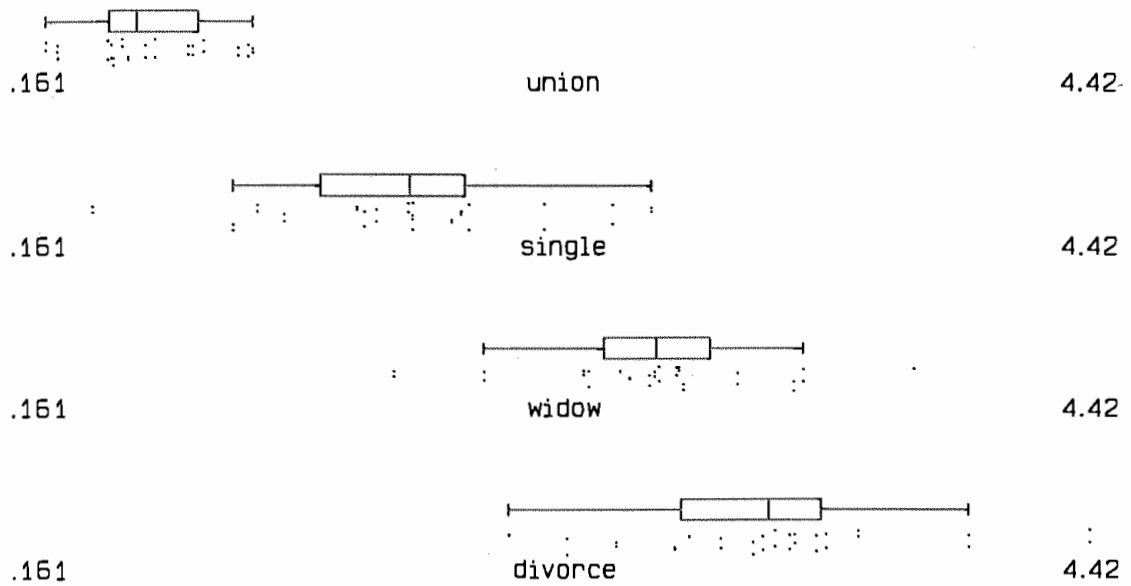


Figure 5a: Estimated effects of marital status

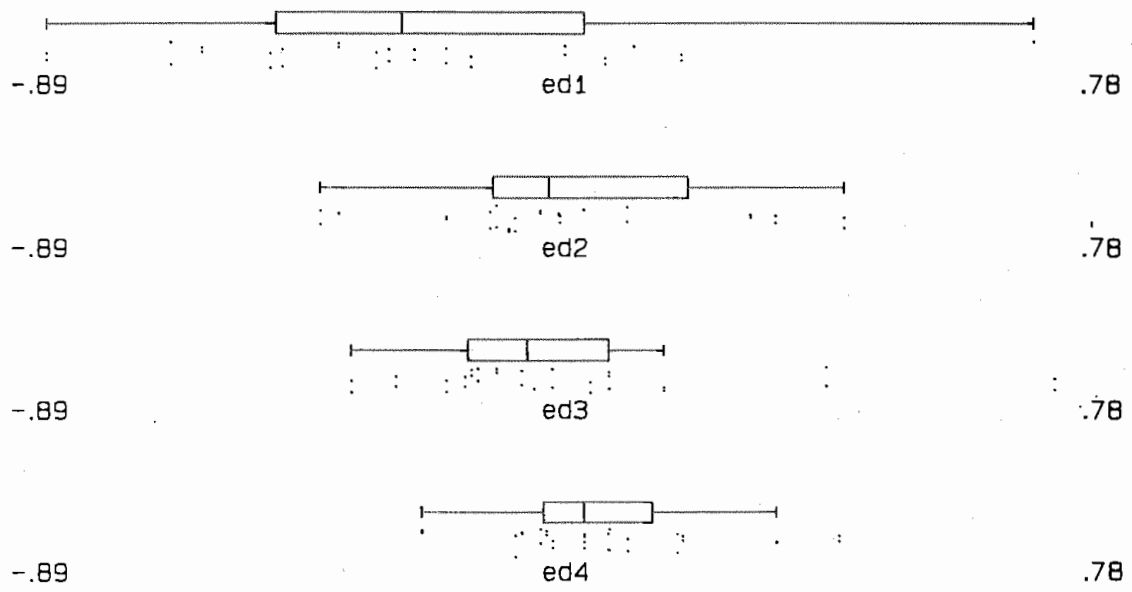


Figure 5b: Estimated effects of education

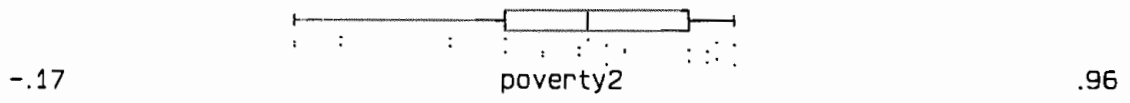
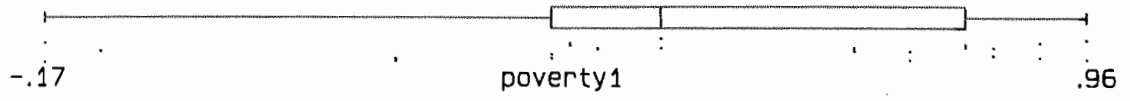


Figure 5c: Estimated effects of poverty

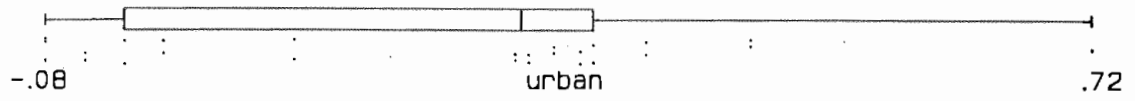


Figure 5d: Estimated effects of urban residence

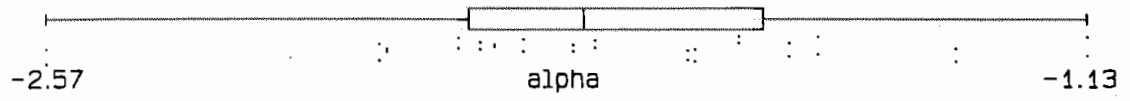


Figure 5e: Estimated effects of ALPHA

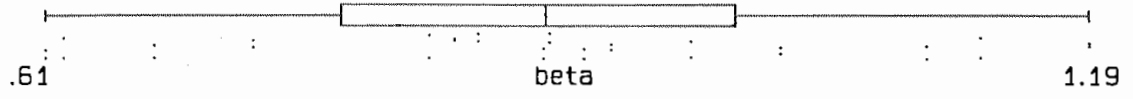


Figure 5f: Estimated effects of BETA

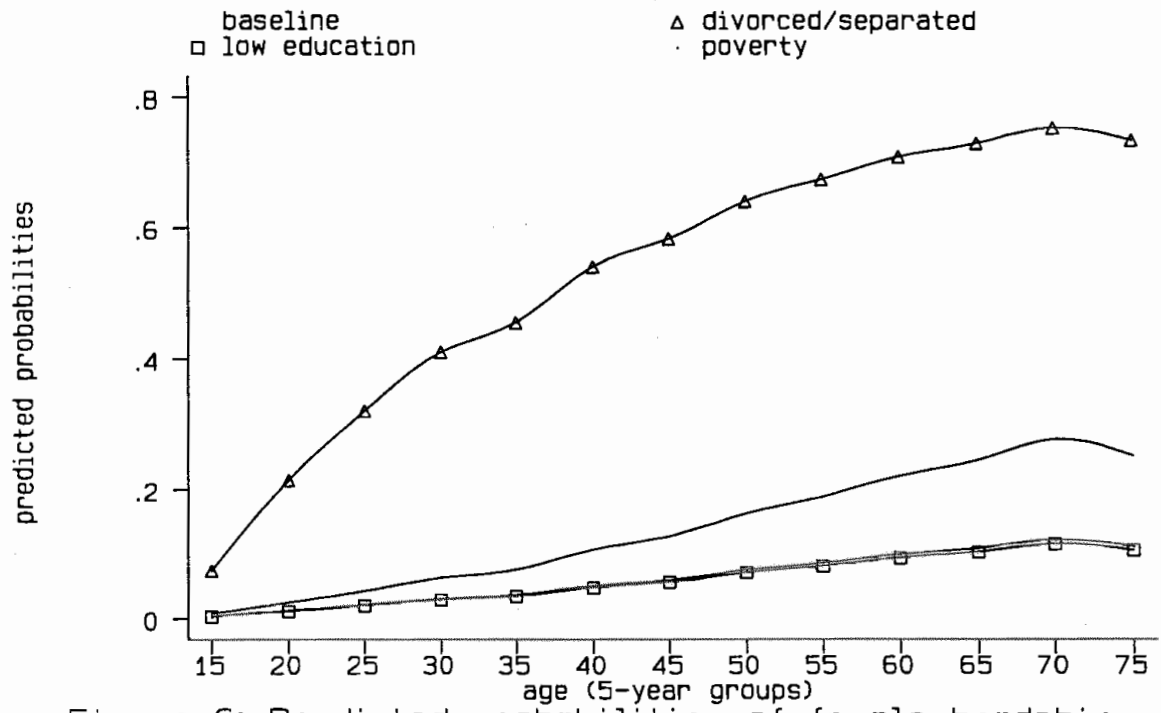


Figure 6: Predicted probabilities of female headship

Appendix A. Decomposition of Change in the Estimated Probability of Female Headship

| Country/Age | P ₂ | P ₁ | T.D. | Age | Population Composition Effects | | | | |
|-------------|----------------|----------------|------|------|--------------------------------|------|------|-------|------|
| | | | | | M.S. | Ed. | Pov. | Urban | |
| Argentina | | | | | | | | | |
| 20-25 | 3.0 | 2.4 | 0.6 | 0.4 | 0.1 | 0.1 | | | |
| 40-45 | 9.9 | 8.8 | 1.1 | 0.6 | 0.3 | 0.2 | | | |
| 60-65 | 17.1 | 16.0 | 1.1 | 0.4 | 0.5 | 0.3 | | | |
| Chile | | | | | | | | | |
| 20-25 | 2.5 | 4.0 | -1.5 | -1.5 | 0.0 | 0.1 | -0.2 | | 0.1 |
| 40-45 | 10.0 | 12.0 | -2.1 | -2.0 | 0.1 | 0.4 | -0.7 | | 0.2 |
| 60-65 | 18.6 | 19.8 | -1.2 | -1.2 | 0.1 | 0.7 | -1.1 | | 0.3 |
| Colombia | | | | | | | | | |
| 20-25 | 4.0 | 8.7 | -4.8 | -5.2 | -0.5 | 0.0 | -0.2 | | 0.2 |
| 40-45 | 15.9 | 20.7 | -4.8 | -6.0 | 1.2 | 0.0 | -0.6 | | 0.6 |
| 60-65 | 37.7 | 30.0 | 7.7 | 6.0 | 1.7 | 0.0 | -0.9 | | 0.9 |
| Costa Rica | | | | | | | | | |
| 20-25 | 1.6 | 2.4 | -0.8 | -0.4 | 0.0 | 0.0 | -0.4 | | 0.0 |
| 40-45 | 9.1 | 11.6 | -2.5 | -0.9 | 0.2 | 0.1 | -1.7 | | -0.1 |
| 60-65 | 19.6 | 23.1 | -3.5 | -0.6 | 0.3 | 0.2 | -3.1 | | -0.3 |
| D. Republic | | | | | | | | | |
| 20-25 | 6.3 | 7.2 | -0.9 | -0.9 | 0.7 | -0.4 | | | -0.9 |
| 40-45 | 24.6 | 25.9 | -1.4 | -1.1 | 2.1 | -1.2 | | | -1.1 |
| 60-65 | 41.6 | 42.4 | -0.8 | -0.5 | 2.7 | -1.5 | | | -1.4 |
| Ecuador | | | | | | | | | |
| 20-25 | 6.1 | 5.4 | 0.7 | 0.9 | -0.2 | 0.1 | 0.0 | | 0.0 |
| 40-45 | 15.2 | 14.6 | 0.6 | 0.9 | -0.5 | 0.3 | 0.0 | | 0.0 |
| 60-65 | 22.9 | 22.8 | 0.0 | 0.4 | -0.7 | 0.4 | -0.1 | | 0.0 |
| Panama | | | | | | | | | |
| 20-25 | 4.6 | 4.4 | 0.2 | -0.1 | -0.1 | 0.3 | | | 0.0 |
| 40-45 | 16.5 | 15.8 | 0.7 | -0.1 | -0.2 | 1.1 | | | 0.0 |
| 60-65 | 28.3 | 27.1 | 1.1 | -0.1 | -0.4 | 1.6 | | | -0.1 |
| Paraguay | | | | | | | | | |
| 20-25 | 2.4 | 3.1 | -0.7 | -0.5 | -0.3 | -0.1 | 0.0 | | 0.1 |
| 40-45 | 14.8 | 17.1 | -2.3 | -1.0 | -1.3 | -0.3 | -0.1 | | 0.3 |
| 60-65 | 31.3 | 34.1 | -2.8 | -0.6 | -2.1 | -0.4 | -0.1 | | 0.5 |

Appendix A. (Cont'd) Decomposition of Change in the Estimated Probability of Female Headship

| | | Propensity Effects | | | | | | | |
|-------------|----------------|--------------------|-------|-----|------|------|------|-------|--|
| Country/Age | P ₂ | P ₁ | T.D. | Age | M.S. | Ed. | Pov. | Urban | |
| Argentina | | | | | | | | | |
| 20-25 | 2.0 | 2.4 | -0.4 | 0.0 | -0.1 | -0.3 | | | |
| 40-45 | 7.3 | 8.8 | -1.5 | 0.0 | -0.5 | -1.0 | | | |
| 60-65 | 13.5 | 16.0 | -2.5 | 0.0 | -0.8 | -1.6 | | | |
| Chile | | | | | | | | | |
| 20-25 | 6.5 | 4.0 | 2.5 | 0.0 | 1.1 | 0.1 | 0.0 | 1.4 | |
| 40-45 | 18.6 | 12.0 | 6.6 | 0.0 | 2.8 | 0.2 | 0.0 | 3.6 | |
| 60-65 | 32.6 | 19.8 | 12.9 | 3.0 | 4.1 | 0.3 | 0.1 | 5.4 | |
| Colombia | | | | | | | | | |
| 20-25 | 12.3 | 8.7 | 3.6 | 0.0 | 5.5 | -1.8 | -0.2 | 0.1 | |
| 40-45 | 27.7 | 20.7 | 7.0 | 0.0 | 10.7 | -3.4 | -0.4 | 0.2 | |
| 60-65 | 40.4 | 30.0 | 10.3 | 0.0 | 13.2 | -4.2 | 1.1 | 0.2 | |
| Costa Rica | | | | | | | | | |
| 20-25 | 3.7 | 2.4 | 1.3 | 0.0 | 1.0 | -0.3 | 0.5 | 0.1 | |
| 40-45 | 17.1 | 11.6 | 5.5 | 0.0 | 4.1 | -1.1 | 2.0 | 0.4 | |
| 60-65 | 32.1 | 23.1 | 9.0 | 0.0 | 6.8 | -1.8 | 3.3 | 0.7 | |
| D. Republic | | | | | | | | | |
| 20-25 | 4.5 | 7.2 | -2.7 | 0.0 | 0.5 | -1.9 | | -1.3 | |
| 40-45 | 17.5 | 25.9 | -8.5 | 0.0 | 1.4 | -5.8 | | -4.1 | |
| 60-65 | 30.8 | 42.4 | -11.6 | 0.0 | 1.9 | -7.9 | | -5.6 | |
| Ecuador | | | | | | | | | |
| 20-25 | 5.2 | 5.4 | -0.1 | 0.0 | 0.3 | 0.0 | -0.3 | -0.1 | |
| 40-45 | 14.3 | 14.6 | -0.3 | 0.0 | 0.8 | -0.1 | -0.8 | -0.3 | |
| 60-65 | 22.4 | 22.8 | -0.4 | 0.0 | 1.1 | -0.1 | -1.1 | -0.4 | |
| Panama | | | | | | | | | |
| 20-25 | 7.6 | 4.4 | 3.2 | 2.9 | 0.3 | -0.3 | | 0.2 | |
| 40-45 | 16.4 | 15.8 | 0.6 | 0.0 | 0.8 | -0.6 | | 0.4 | |
| 60-65 | 28.1 | 27.1 | 0.9 | 0.0 | 1.2 | -1.0 | | 0.7 | |
| Paraguay | | | | | | | | | |
| 20-25 | 4.3 | 3.1 | 1.2 | 0.0 | 0.6 | 0.2 | 0.1 | 0.2 | |
| 40-45 | 22.3 | 17.1 | 5.2 | 0.0 | 2.8 | 1.1 | 0.3 | 1.0 | |
| 60-65 | 41.8 | 34.1 | 7.7 | 0.0 | 4.1 | 1.6 | 0.5 | 1.5 | |

Source: Census Microfiles

Appendix B. Distribution of Headship Status by Household Type

| Country/time | | Single | Nuclear | Extended | Composite |
|--------------|----------|--------|---------|----------|-----------|
| Argentina | | | | | |
| 1970 | | | | | |
| | head | 25.8 | 32.8 | 30.5 | 10.9 |
| | non-head | 0.0 | 53.8 | 32.8 | 13.4 |
| 1981 | | | | | |
| | head | 25.3 | 31.4 | 32.5 | 10.8 |
| | non-head | 0.0 | 52.9 | 35.0 | 12.1 |
| Chile | | | | | |
| 1970 | | | | | |
| | head | 11.8 | 32.2 | 36.6 | 19.3 |
| | non-head | 0.2 | 40.5 | 35.4 | 23.9 |
| 1982 | | | | | |
| | head | 14.7 | 31.8 | 38.5 | 15.0 |
| | non-head | 0.0 | 43.3 | 39.4 | 17.3 |
| Colombia | | | | | |
| 1973 | | | | | |
| | head | 8.8 | 36.3 | 36.1 | 18.1 |
| | non-head | 0.0 | 34.0 | 36.6 | 29.4 |
| 1985 | | | | | |
| | head | 10.2 | 33.1 | 41.4 | 15.4 |
| | non-head | 0.0 | 38.9 | 40.4 | 20.7 |
| Costa Rica | | | | | |
| 1973 | | | | | |
| | head | 10.1 | 40.6 | 37.8 | 11.5 |
| | non-head | 0.0 | 52.5 | 33.4 | 14.2 |
| 1984 | | | | | |
| | head | 12.7 | 41.0 | 37.9 | 8.4 |
| | non-head | 0.0 | 57.0 | 32.6 | 10.5 |
| D. Republic | | | | | |
| 1970 | | | | | |
| | head | 10.3 | 37.3 | 34.6 | 17.3 |
| | non-head | 0.1 | 39.2 | 33.7 | 27.0 |
| 1981 | | | | | |
| | head | 11.4 | 32.6 | 45.2 | 10.8 |
| | non-head | 0.0 | 40.9 | 44.1 | 15.0 |
| Ecuador | | | | | |
| 1974 | | | | | |
| | head | 12.8 | 38.6 | 36.2 | 12.4 |
| | non-head | 0.0 | 41.9 | 38.1 | 20.0 |
| 1982 | | | | | |
| | head | 13.7 | 36.4 | 38.7 | 11.3 |
| | non-head | 0.0 | 43.4 | 41.2 | 15.4 |
| Panama | | | | | |
| 1970 | | | | | |
| | head | 16.2 | 32.5 | 40.1 | 11.1 |
| | non-head | 0.0 | 40.8 | 41.7 | 17.4 |
| 1980 | | | | | |
| | head | 15.1 | 35.8 | 40.2 | 8.9 |
| | non-head | 0.0 | 45.3 | 43.1 | 11.6 |
| Paraguay | | | | | |
| 1972 | | | | | |
| | head | 10.9 | 34.3 | 40.0 | 14.8 |
| | non-head | 0.0 | 41.3 | 35.4 | 23.3 |
| 1982 | | | | | |
| | head | 13.8 | 32.6 | 41.7 | 11.9 |
| | non-head | 0.0 | 45.5 | 38.3 | 16.2 |

Source: Census Microfiles

END NOTES

1. This measure or index was constructed by adding all females (as reported in published census data) in the marital status categories separated/divorced, single and widowed and dividing the resulting figure by the sum of all males ever married and in consensual unions and all females in the same categories.
2. An indicator of who bears chief economic responsibility and who controls resources in the household, this index was constructed by measuring each household member's share of total hours of market work, with headship attributed to the person who worked the most hours in a 12 month period.
3. Censuses in which the head of the household is determined by household members: Argentina 1970, 1981; Chile 1970, 1982; Colombia 1973, 1985; Costa Rica 1973, 1984; Dominican Republic 1970, 1981; Ecuador 1974, 1982; Guatemala 1981; Panama 1970, 1980.
4. The decomposition procedure utilized here was suggested by Das Gupta (Das Gupta, 1993). It partitions the difference between two crude rates into a component attributable to differences in propensities or rates and another attributable to differences in composition. The procedure does not require an interaction term.
5. The estimates of components presented in Table 2 are, however, not affected by differential composition by age and marital status. The estimated contribution of age, marital status and rates are valid under a quite general set of conditions (Das Gupta, 1993).
6. Index I is analogous to the one proposed by Coale for the study of fertility (Coale, 1986). The suggestion to extend Coale's index to the study of headship was first put forward by Burch (Burch, 1987). The index requires minimal information, namely, knowledge of total number of females who are heads and F_x , the number of females at age x . However, further analysis and decomposition of the index requires information on the composition of the female population by marital status. Since I_{r_i} represents a measure (indirectly standardized) of 'propensity' toward female headedness among those in marital status i and I_{c_i} reflects the composition by marital status, the overall index is a weighted average of propensities by marital status. Note that the values of I_{c_i} add up to 1.0. Changes in the index can, therefore, be the result of changes in propensities and changes in (age-weighted) composition by marital status. Thus, the difference between any two values of the index—for different countries or for the same country at two different points in time—can be decomposed into changes associated with propensities and changes associated with composition by marital status. Since the value of each of the I_{r_i} is a function of the age specific rates and age composition, one can also calculate the contribution of differences in age composition to differences in the overall value of the index. Since each I_{r_i} is an indirectly standardized index for age, the effects of different age composition do not contaminate in any significant way the overall value of the index.
7. To overcome the problem generated by female respondents who are in consensual unions but declare themselves to be single (Fussell and Palloni, 1995), we use the combined indices I_c for unions and single rather than only the former as we should given the tenor of the hypothesis.
8. The change in the rates r_x produced by a change in α is proportional to the product $(1-r_x)r_x$. This product increases up to reach a maximum when $r_x=.50$. Therefore, any change in α has a stronger impact at older ages where r_x are higher. Similarly, the change in the rates produced by a

change in β are proportional to $(1-r_x)r_x\theta_{sx}$. It turns out empirically that the increase with age in r_x is exactly compensated by decreases in the (absolute) value of θ_{sx} which in turn leads to age invariance in the magnitude of changes attributable to shifts in the value of β .

9. We assume that covariates exert influences on α rather than on β since this is the most parsimonious modelling strategy, but there is no theoretical reason why one should be preferred over the other. The strategy followed here, however, will be more appropriate to the extent that effects vary by age.

10. The description of the variables used in the models is as follows:

- a) marital status is represented by five dummy variables capturing women who are single; in a union; widows; separated or divorced; and married women (the residual category).
- b) education is represented by five dummy variables capturing women who have no formal education; primary; middle; high school; or university or superior (the residual category).
- c) poverty is measured with three dummy variables reflecting low housing quality; moderate housing quality; and high housing quality (residual category). The dummies are the grouping of a cross-country/time standardized housing quality scale which includes information on a housing unit's wall, floor, and roof materials; availability of electricity; connection to sewerage system; and accessibility to piped drinking water (Arias and De Vos, 1996).
- d) rural/urban residence is measured with two dummy variables attaining the value 1 when the woman resides in an urban area. The residual category is rural.

11. $P(a,b,c,d,e) - P(A,B,C,D,E) = \text{Age} + \text{Marital Status} + \text{Education} + \text{Poverty} + \text{Urban effects}$. To determine Age effects, $P(a)-P(A)$, for example, the following procedure is carried out:

$$\begin{aligned}
 P(a) - P(A) &= [P(A,b,c,d,e) + P(A,B,C,D,E)]/5 \\
 &+ \\
 &[P(A,b,c,d,E) + P(A,b,c,D,e) + P(A,b,C,d,e) + P(A,B,c,d,e) + P(A,B,C,D,e) + P(A,B,C,d,e) + \\
 &P(A,B,C,d,E) + P(A,B,c,D,E) + P(A,b,C,D,E)]/20 \\
 &+ \\
 &[P(A,b,c,D,E) + P(A,b,C,d,E) + P(A,b,C,D,e) + P(A,B,C,d,e) + P(A,B,c,D,e) + \\
 &P(A,B,c,d,E)]/30.
 \end{aligned}$$

The other effects are similarly derived (See Das Gupta, 1993).

12. Definition of household type variable: 1. **single person household**: one person family; 2. **nuclear family household**: one or two parents and their single children; 3. **extended family household**: relatives who belong to one or more than one conjugal unit; i.e., a grandparent with nuclear family, two or more nuclear families, a nuclear family and another relative, etc.; 4. **composite family household**: any multiperson household that contains at least one person who is unrelated to the household head.

13. See endnote number 10.

Center for Demography and Ecology

University of Wisconsin

1180 Observatory Drive Rm. 4412

Madison, WI 53706-1393

U.S.A.

608/262-2182

FAX 608/262-8400

email: arias@ssc.wisc.edu