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**HIGH FERTILITY IN THE CENTRAL AMERICAN ISTHMUS:
A RISK IN TRANSITION**
(Translation of Spanish Version)

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1. INTRODUCTION

APPROACH AND CONCEPTUALIZATION OF THE PROBLEM

The Central American isthmus has undergone profound changes over the last 30 years (United Nations, 2002; CEPAL/CELADE, 1998 and 1995; Pebley and Rosero, 1997). There is general agreement that the most significant transformation has been the swift fertility decline, which can be represented by the drop in the Total Fertility Rate (TFR), from an average of almost 7 children per woman in 1960 to the current average on the order of 3 (United Nations, 2001, p.88). Available longitudinal estimates ratify that this decline has occurred, at least on the average, in women's real reproductive histories, and this latter can be seen in those women that are currently reaching the end of their fertile years, who have accumulated a number of children significantly below that of the women who completed their child-bearing years between 1970 and 1990 (Rodríguez 2003; www.measuredhs.com).

This drop in fertility has followed a relatively predictable course, on the basis of a reduction in higher order births. The evolution of age-specific fertility rates, for example, shows that the greatest drop occurred in fertility during the last 15 years of their reproductive life, precisely in those years when women from the Isthmus tended historically to have their higher order births. The evolution of other measures that consider fertility explicitly by birth order –rates by age and birth order, probabilities for enlarging the family, etc.- also support this conclusion of a decline based on a reduction in women's reproductive intensity and not in an increase of nulliparous women (Rodríguez, 2003; Bongaarts, 2002; United Nations, 2002; Juárez and Llera, 1996; www.measuredhs.com).

Several traditional measures used to describe the fertility trajectory –Total Fertility Rate (TFR), and mean parity- synthesize information and provide mean representations of the reproductive intensity for a real or hypothetical cohort, which can be classified as high according to different criteria: (a) a gap with regard to mean values used as a standard for comparison (for example, the total mean compared to means from sub-groups); (b) the ratio to a threshold defined exogenously. However, high fertility is, in

principle, a trait that any woman could display; it is expressed by individual parity, i.e., the number of children that each woman has had. Given age conditionalities in fertility, the level considered high will vary by age.

High fertility can be considered a socio-demographic risk (CEPAL/CELADE, 2002), since it includes -in probabilistic terms- adversities for individuals and household units. For the same reason, it can be examined under the perspective of vulnerability, which means that the query must be articulated around total amounts and in subgroups with different types of responses and strategies –anticipatory, palliative, assuring, motivational, assistential, and adaptive- displayed by the players to face adversities inherent in their materialization or to adapt to the occurrence of risk over the long term (Diagram 1).

There are multiple purposes behind this query at the individual level: (a) obtain a measure of the probability of having high fertility, which may be intuitive for a non-specialized public as well as being useful for policy aspects. This probability is calculated with observed data, specifically with the number of children a woman has at a specific age. The calculations are not restricted to past fertility, i.e., the cohorts that are completing their child-bearing years, since it is possible to classify any woman according to her fertility situation with a dichotomic high/not-high; (b) analyze conditional probabilities, for example from education or the socio-economic situation, of having high fertility at different ages (simple or grouped); (c) estimate the number of women with high fertility at a specific point in time. This information is useful for designing public policies –from those related to sexual and reproductive health to families and maternal subsidies, passing through school retention rates, support for labor force insertion of women or of transfer payments- because they provide a basic indication of a population group that is worthy of special treatment; (d) locate and characterize those women with high fertility to make a more systematic and substantive contribution in the area of establishing priorities, definition of types of intervention and allocation of resources related to high fertility or women with high fertility. To achieve the last three goals, we must work with census micro-data.

In view of the fact that prior papers have advanced the analysis of high fertility at the regional level from the vulnerability approach (Rodríguez, 2003), in this document the analysis will concentrate on high fertility in two clearly defined age groups, women aged 17 years and those aged 35 to 39 years, falling at the two terminuses of the reproductive spectrum. Our analysis is based on processing census micro-data and will attempt to respond to the following questions: (a) how has high fertility evolved in these two age groups during the most recent intercensal lapse; (b) among which women is high fertility more frequent; and, (c) what responses are associated with high fertility in the realm of the couple's arrangements, support for child-rearing, and women's activities. Finally, we will discuss the conceptual, methodological, and political implications of the results.

2. OPERATIONAL DEFINITIONS

The analysis will be carried out for three complete countries, Costa Rica, Honduras, and Panama, and for the five states of “Southern Mexico” as a group. All of these have censuses for the 1990 and 2000 rounds, which allows us to ascertain the evolution of high fertility during the decade of the 90’s (in the Costa Rican case, the reference period is 1984-2000.¹ In line with the definition described in a previous paper (Rodríguez 2003), we will use an exogenous criterion to define high fertility. We will classify in this category those women aged 17 years old with one or more living children (to refer to this group, we will use the alternatives 17 year-old mothers or adolescents with early or precocious fertility or early high fertility) and women 35 to 39 years of age with 5 or more live births. In this latter case, the calculations will distinguish the number of children, which will allow a more refined view of the parity structure at different points in time. The synthetic indicator of high fertility is a proportion (usually expressed in percentage terms) whose numerator is the women in the selected ages with the number of children set as high fertility and the denominator is the total number of women in those ages (both data are obtained through direct processing of the census database).

The foregoing definition includes a prior decision regarding the numerator and denominator. The census question used to identify women with high fertility –**children born live (CBL)**²? tends to register high rates of non-response (DK/NR), especially in the younger ages. The cases analyzed in this study are no exception (Tables 1a and 1b). However, the option that common sense and survey experience might suggest, to wit: exclude the DK/NR women from the calculation, not only will deflate the study universe, it may also have consequences for the results, since to avoid any bias, the DK/NR women must have a behavior similar to that of those that did declare, and available evidence suggests that a large majority of the adolescents (women 17 years of age in this document) with DK/NR is nulliparous (Rodríguez, 2003), which is supported by the fact that that they have school non-attendance indicators very similar or even lower than those responding that they have zero children, which contrasts openly with the adolescent mothers, with much higher indices of school non-attendance (Table 2). The classical correction for this problem, e.g., the procedure followed by El Badry (United Nations, 1983), operates on an aggregate scale, which does not work in this case, where we must impute a parity condition to each woman. Therefore, we opted to consider the DK/NR adolescents as nulliparous, and include them in the denominator of the high fertility measurements. In the case of the women aged 35 to 39 years, the DK/NR were excluded from the calculations because any supposition of zero parity is more doubtful.

With regards to the variables that intervene for high fertility, the document only analyzes two, which the literature has indicated as key (United Nations, 2002; Bulatao and Casterline, 2001; Chackiel and Schkolnik, 1998; Guzmán et al., 1996; CEPAL/CELADE, 1998 and 1995) and that are possible to examine for all the points in time and countries

¹ The micro-data databases in REDATAM format from all of these Censuses were used. In the 1990 Mexican case, the database available in CELADE was limited, which severely restricted the diachronic analysis. All REDATAM programs used to obtain the results presented here are available on request from the author.

² For some queries, the variable on surviving children was also used.

examined. These are: (a) women's education: measured systematically by years of schooling;³ and (b) socio-economic stratum of the household where the woman resides: measured by means of an index based on the appliances available in the household.⁴ In addition to these intervening variables, the paper explores other variables that are linked to the context and response in the face of high fertility, such as the conjugal situation, domestic situation, and educational trajectory, which were used for the query on background and responses to high early fertility.⁵

Finally, with regards to methods, in view of the characteristics of the information used (census micro-data), as well as the computer program used to process the data (REDATAM), we chose multivariate tables where the indicator of high fertility was crossed with several variables simultaneously, generating conditional probabilities for having high fertility or, according to the lay-out of the table, responses in the face of high fertility. REDATAM allows the cross-tabulation of a maximum of four variables, but by means of the expedient of selecting categories for a fifth variable, it was possible to achieve tabulations with four control variables. Since they are census data, any difference in the data is representative of the universe, although it is not necessarily stable over time.

3. CONCEPTUAL ELEMENTS: HIGH FERTILITY AS A HAZARD and RESPONSES TO ITS OCCURRENCE

3.1. High fertility as a hazard

High fertility is associated with different adversities. Several of these are expressed as a scale at the aggregate level (Merrik, 2002; Birdsall and Sinding, 2001; Martínez, 1999; Lipton, 1995) and will not be dealt with in this paper, which will concentrate on adversity at the individual and household level. On an individual scale, these operate directly on the mother/child dyad, because the probability of health complications for both tends to increase at higher birth order numbers due to shorter birth intervals, higher age pregnancies, and the wear and tear caused by prior pregnancies. These adversities can also be felt on the life trajectories of parents and children; for parents, high fertility implies a burgeoning source of demands, obligations, and needs that entail direct, indirect, and opportunity costs. Some of these are expenditures, but others circumscribe alternate options for the use of their time. In fact, this conflict with "other activities" may have immediate negative financial consequences, if the "other activities" were being carried out and were income generators, as occurs with the opposition between child-

³ In most of the censuses this variable had to be constructed on the basis of queries on the grade and level of education achieved.

⁴ This was calculated as a simple sum, except for some specific appliances, which were weighted by a factor of two, for a set of appliances virtually common to all of the censuses (television, telephone, vehicle, refrigerator, stove, computer, washing machine, and some others "ad hoc"). Then three strata were distinguished (low, medium, and high), as close as possible to "terciles" (except in the case of Honduras, where the predominance of the lowest stratum was insurmountable in both censuses), in order to make diachronic comparisons in each country. For more detail, please contact the author.

⁵ In this case, three categories were defined by years of study achieved at age 17 years: (a) drop-outs: less than 8 years of schooling; (b) fall behind: 8 or 9 years of schooling; and, (c) normal 10 or more years of schooling.

care and work, especially for women, or longer term, if the “other activities” were related to the accumulation of assets associated with greater future income, e.g., attending school. For the children, on the other hand, being part of a large family means, *ceteris paribus*, reduced availability of resources and probabilities of care (Merrik, 2002; Birdsall and Sinding, 2001; Livi-Bacci, 1995). At the household level, the family budget tends to be diluted in contexts of high fertility (Parcel and Dufur, 2001, p. 34). Finally, high fertility implies restrictions for gender equity, in view of the significant inequities in the distribution of child-care responsibilities by gender (MacDonald, 2002); similarly, it generates situations leading to an asymmetrical distribution of power among males and females within the household, in particular, it promotes domestic anchoring of females.

High fertility tends to generate these adversities in probabilistic terms. Which may then materialize depending on exogenous factors, such as the socio-economic situation (of the individuals and the milieu within which they reside), the cultural value placed on reproduction, family relations, informal support networks, and social security systems. In addition, there have been frequent mentions of the existence of compensations or advantages related to high fertility, such as economies of scale that imply decreasing marginal costs; availability of a dependent and free domestic labor force for the parents; a broad kinship network that extends and diversifies the potential sources of support; an incentive for competitiveness to obtain resources starting in childhood, etc. However, even with these “advantages” there is a consensus that in modern society a large number of children is adverse in net terms (Attanasio and Székely, 2003; Birdsall and Sinding, 2001; Bulatao and Casterline, 2001; Ribero, 2001; CEPAL/CELADE, 1998 and 1995; Livi-Bacci, 1995; Lipton, 1995); the same is true for high early fertility (UNFPA, 2003; Rodríguez, 2003 and 2001; CEPAL/CELADE, 2002, 2000, and 1998; Flórez and Núñez, 2002; Hobcraft and Kiernan, 2001).

It is worth noting that the adversities are not imputed to reproduction alone, but to an intense reproductive trajectory or one with a precocious initiation. Although several of the complications described are valid for any birth-order number, societies tend to organize so as not to totally impede reproduction among couples. Additionally, there is a persistent cultural and psychosocial value granted to children, so that we should not be surprised by a responsible preference to have and raise a limited number of them instead of carrying out other profitable or pleasing activities.

3.2 Responses in the face of high fertility

The classic and most relevant response in policy terms is prevention. However, this option is of no use for facing the adversities that occur once the high fertility has occurred.⁶ Thus, this paper will not delve into the preventive option.⁷ Nevertheless,

⁶ In spite of this, the dependency of high fertility with regard to age introduces a specific space for preventive conduct as an action in response to the occurrence of the risk. This is so, because preventing pregnancy may make a woman with high early fertility cease to be categorized as such after passing a certain age threshold. In fact, this change of status would not inhibit the adversities produced by her high early fertility, but it could have significant cushioning effects.

⁷ Otherwise, the censuses do not collect information on contraceptive methods, the main means for preventing high fertility.

there is a broad variety of behaviors, practices, norms, institutions, resources, and policies, which are used to confront high fertility at the community, domestic, and individual levels. Several of these –infanticide, child abandonment, or forced sterilization after a certain number of children- are attacks against universally recognized human rights. Although they should have been eradicated, they are still in use under extreme demographic and socio-economic conditions (Johnson, Banghan, and Lyao, 1998).

Others are worthy of varied attention. One illustrative case is female labor, since initially it appears as one of the components of adversity from high fertility, in view of the opposition that usually exists between child-rearing, particularly for a numerous brood, and female labor force insertion. However, high fertility may trigger decisions for a woman to join the labor force precisely to meet the costs of child-rearing. Only empirically can we resolve this conceptual ambiguity and verify which of these effects predominates (incompatibility vs. pressure to work). In fact, the option of “staying home” for women is a response and it has a direct link to assuming the responsibilities of child-rearing and its unequal gender distribution. When “staying home” implies leaving school, the response has an adverse aspect, because it truncates the most highly acknowledged mechanism for social mobility: the accumulation of educational assets.

An option that falls more into the realm of adaptations to high fertility is child labor. This option has frequently been considered as a component of “survival strategies” of poor groups (Guzmán, 1997), even though ever since the studies of Cain on Bangladesh and the reply from Bulatao and Lee (Stecklov, 1997), there has been a controversy on the real monetary contribution of children *vis a vis* their costs. In fact, the region is not free from this debate (Guzmán, 1997). Whatever the case may be, there is evidence that it is a perverse adaptation because over the long-term it erodes the life-time trajectory of the working children (Emerson and Portela, 2003). Other adaptive options with historical roots are supports for child-rearing; these may run from informal mechanisms (such as “aunts” and “neighbors”) to services offered on the market (domestic employment) running through family support (“caring grandmothers”, etc.) (CEPAL/CELADE, 2002; Ariza and de Oliveira, 2001; Arriagada, 2001; Tuirán and Salles, 1997; Lomnitz and Pérez, 1986).

A special mention is due institutional responses that run from socially organized systems for facing the consequences of unwanted fertility or avoided or exceeded responsibility –such as adoption institutions and those caring for children “given up”- to those called “family policies” which use instruments such as transfers, tax exemptions, and maternity leaves, etc., to support a family with children (MacDonald, 2002). In fact, these policies usually attempt to promote reproduction when it is very low, as they have not been designed to support women with many children (MacDonald, 2002). Other actions point to specific aspects where high fertility generates adverse repercussions; an example of this type are health, education, and housing sector policies that provide special treatment to high fertility women: (a) follow-up and special care during pregnancy for women that are mothers at very early ages or that already have numerous children; (b) explicit norms against expulsion from the school system for pregnant adolescents and special support to avoid their dropping out; (c) housing

allocations that consider family size as a priority. All these interventions are relevant and many of them, especially those related to avoiding adverse consequences from high fertility at early life stages are implemented in several countries throughout the region (CEPAL/CELADE, 2002). However, unless it is a long-term alternative in the face of preventive policies (the recommended option), they should be designed in such a way that they do not encourage persistent high fertility.

This paper attempts to examine some of the responses and adaptations described above, considering the limitations encountered in census data for this purpose, insofar as it is not ideal for diachronic examination (as corresponds to the notion materializing risk ? response)? and that only provides guidelines for action for responses of a political nature. In addition, one response widely disseminated throughout the region, the use of domestic service or help, is not captured well by *de jure* censuses (a majority of those processed for this paper). In spite of all these limitations, the paper attempts to follow an analytical logic of vulnerability as described in Diagram 1.

4. PRINCIPAL FINDINGS

4.1. Magnitude, trends, and differentials of high fertility

4.1.1. Levels and evolution of high fertility: 17 years and 35 to 39 years

Figures 1a and 1b allow us to conclude that there is a bifurcation between the probability of experiencing high fertility due to numerous children around 40 years of age and the probability of doing so through early initiation of reproduction. The former registers a significant drop, in tune with the fall in total fertility throughout the sub-region. The Costa Rican case is illustrative: in 1984, 30% of women aged 35 to 39 years had 5 or more children (45% had 4 or more), by 2000, this proportion had fallen to 15% (29% if you consider 4 or more) (Figure 1b and Table 3). This did not occur in an equivalent manner with maternity among 17 year-olds, which has tended to increase in all of the countries analyzed in the intercensal period of interest (Table 1a and Figure 1a).

These figures ratify conclusions from recent studies in the sense that one of the peculiarities relevant to fertility decline within the region is that it has occurred without a delay to the initiation of reproduction (CEPAL/CELADE, 2002 and 1998). Women tend to have fewer children than in the past, but continue to have their first early, which erodes some of the advantages that they could have derived from a lowered reproductive intensity (Rodríguez, 2003). This behavior is linked to a pattern of union initiation showing no signs of delay. However, this latter intermediate fertility variable is not the only one relevant for explaining stubborn early maternity; modifications in sexual behavior, psychological specifications of male and female adolescents and the roles played by relevant agents (the family, the health sector, and the mass media) are also significant, whether in the sense of promoting an earlier sexual and pre-nuptial initiation and/or the non-facilitation of access or adequate use of contraceptive methods (UNFPA, 2003; CEPAL/CELADE, 2002 and 2000; Flórez and Nuñez, 2002; Fischhoff,

Nightingale, and Iannota, 2001; Contreras, Guzmán, and Hakkert, 2001; Rodríguez, 2001). In synthesis, the results suggest a particular remodeling of the risk of high fertility, which falls abruptly for the higher age groups, but is stable among the younger ages, currently affecting one of every six adolescents aged 17 years in the region under study.

4.1.2. High early fertility, schooling, and socio-economic stratum

As has been reported since the beginning of research on fertility in the region, the probability of experiencing high fertility varies among socio-economic groups (Rodríguez, 2003; CEPAL/CELADE, 2002 and 2000; United Nations, 2003 and 2002; Contreras, Guzmán and Hakkert, 2001). The variable that continuously appears as the most relevant for discriminating levels of reproduction has been education, although there is a debate over the linearity of its effect (Rodríguez, 2003; Lindstrom and Brambila, 2002; United Nations, 2002) and its effect over the long-term (United Nations 2003 and 2002); along the same line and in spite of its concomitance with education the effect of socio-economic stratum has also been highlighted (Flórez and Nuñez, 2002).

The four countries examined demonstrate the importance and specificity of the “education effect” on early fertility since they all follow a common pattern of the “irrelevance” of schooling to fertility up to the point of inflexion, around six years of schooling, after which point the probability of having high fertility is drastically and continuously reduced, following an almost linear trajectory which stabilizes at very low levels among the young women with very high levels of education (Figure 2). In the three countries for which we have data from two censuses, this pattern does not show significant changes over time; only in Panama has there been a certain remodeling, since the probability of having been a mother at age 17 moved from stability (at high levels) between 0 and 5 years of study to a staggered slope (still at high levels) between 0 and 5 years (Figure 2). On the other hand, the effect of socio-economic stratum on early maternity makes a significant difference when comparing women with low levels of schooling: in these conditions, the probability of being a mother at age 17 for an adolescent from the lower stratum is four-fold that of an upper stratum adolescent;⁸ revealing a protective effect from the socio-economic conditions when an adolescent has a precarious educational trajectory; to the contrary, when the adolescents have a high educational level, the disparities among the strata dissipate, although they do not disappear, since the well-educated adolescents from the lower stratum have a high fertility rate that is only twice as high as their counterparts in the upper stratum (Table 4). Nevertheless, when extreme groups are compared on both variables, the disparities multiply. Up to 50% of adolescents experience early high fertility when both schooling and socio-economic stratum are low (Panama, 1990) and the proportion does not exceed 3% when education and stratum are high; the probability of having been a mother at age 17 is between 12 and 29 times greater in the lower education and stratum group with regard to the higher education and upper stratum group (Table 5).⁹

⁸ In any case, women with low education and high stratum are a small fraction of the total and of their own stratum (runs not shown here) and there are indications that they have an over representation of disabled persons, which may be behind the meager high fertility indices they present.

⁹ The relationship between education and maternity at that age presents analytical complications, since by different channels, a precarious education may assist maternity – the lack of information on hazardous behavior

Maternity at age 17 has increased among the most disadvantaged groups (lower education and stratum) in the three countries with data from two censuses; this has not occurred among the adolescents from the elite (higher education and stratum), which have tended to reduce their high fertility indices in countries like Honduras and Costa Rica; and as a corollary of these trends, the socio-economic gap for high early fertility has broadened there (Table 5). In Panama, this is not the case. Elite adolescent females not only increased their high fertility index, but they did so to a degree higher than their poor counterparts; this explains the closure in the gap between the extreme socio-economic strata (Table 5).¹⁰

The relationship between low education and early maternity is complex due to its bi-directional nature. With census data it is not possible to completely clear up the doubt about which of the two directions predominates: if low education and eventual early drop-out precedes the precocious maternity or, inversely, early fertility brings on dropping out of school and the low educational levels- although for adolescents with very low education, it is more probable that dropping out precedes pregnancy. However, we cannot respond to the question on relevant policy with a probability trajectory of having high fertility conditioned by years of schooling (continuous line in Figure 2), but with data on the number of drop-outs that are due to early pregnancy. Even though this information cannot be discerned from census data, the use of the concept *educational trajectory* further below, will provide some clues in this regard. Nevertheless, the figures presented by the dotted line in Figure 2 are useful for designing interventions, since they show that a majority of adolescent mothers do not belong to the educational group with the greatest tendency to experience high early fertility. In fact, in all of the countries in the region, a majority of the females that are mothers by age 17 years, have 6 or more years of schooling, with the mode falling between 6 and 7 years and a secondary peak at 9 years of schooling (Mexico, 2000 and Panama, 2000), reflecting the extension of the basic and secondary cycles in the school systems (Figure 2).

4.1.3. Large family-size towards age 40, education and socio-economic stratum

The probability of experiencing high fertility towards age 40 differs significantly by a woman's educational and socio-economic condition. This stylized pattern suggests a relationship, but does not allow us to deduce its meaning. In fact, the relationship has a degree of endogeneity (Upchurch, Lillard, and Panis, 2002), although a higher socio-

and prevention, ignorance of the basic aspects of sexuality, lack of skill in understanding contraceptive function, disappearance of a personal project- while at the same time early maternity may be a key antecedent for low schooling (if it led to being a drop-out). On the other hand, the relationship between high fertility at age 17 and stratum is more stable, since at this age it tends to operate from material deprivations towards a reproductive conduct, even though in some exceptional cases early maternity may even erode the socio-economic condition of the household where the adolescent resides.

¹⁰ It is worth noting that the comparison between polar groups is exposed to the fallacy of "exaggeration", especially in the case of education, where extreme groups are compared, that through mere inertia in the school system have modified their qualitative relation during the intercensal period. Similarly, the tables where this comparison is made (5 and 6 for women 35 to 39 years) also provide figures on the weight of the polar groups at both points in time. In general, the foregoing proposition is satisfied, especially in Honduras, where the group with low stratum and education significantly reduced their relative weight and thus, the diachronic comparison can provide "forced" gaps. Costa Rica is an exception, where the group with low stratum and low education slightly increased their representation.

educational situation has several paths whereby it impacts final parity –knowledge of fertility control, expansion of the space for free and informed decision-making, opportunity costs, non-fatalistic attitudes in the face of the future and men, projects incompatible with a heavy child-rearing load (United Nations, 2002)? in addition, childbearing, especially at early ages, complicates a continuation of an educational trajectory and hinders social mobility (Andersen, 2003).

Furthermore, the figures presented in Figure 3 ratify prior knowledge, but add some novel elements. Clearly, higher levels of education lead to a reduced probability of a large brood. Except in exceptional cases (such as Panama, 2000), the probability of having high fertility towards age 40 is systematically reduced with each additional year of education. The fall is not linear, and particularly after the basic cycle (6 years of schooling), it is related to a pronounced drop in that probability. When educational levels are high, there are some minor oscillations in this probability, but always at very low levels, below 5%.

In diachronic terms, and only analyzing education because the construction stratum is less relevant for comparison over time, in the three countries with 2 censuses we see the general decline in fertility around age 40 occurred transversally, although in relative terms it was more intense among females with higher levels of education (Figure 3).

When we control by socio-economic stratum, the general trend towards a lower probability of having experienced high fertility with education remains; however, one relevant specificity appears: for the middle stratum and particularly for the upper stratum (especially in the 2000 census round), the effect of education is only felt after the basic cycle has been completed (Figure 3). Taking advantage of the facilities provided by census information, in Figure 3, additional variables are provided which are graphed as a second ordinate. Similar to what we did with the precocious mothers, we have presented the distribution of women aged 35 to 39 years with high fertility by years of schooling. Considering only the 2000 censuses, we can see a disparity between Costa Rica and Panama, on the one hand, and the five southern states of Mexico and Honduras on the other, since in the former, the largest proportion of females with an intense reproductive trajectory when reaching age 40 completed basic education, while in the other two cases, among these women illiteracy or very low educational levels predominate. Although this is a result of current socio-educational conditions in each case, it makes an important difference for child-rearing, for policy design (access through formal means to high fertility women in Hondurans and Mexico seems improbable), and for the characterization of their intense fertility trajectory (linked to traditional contexts in the five southern Mexican states and almost fully ascribed for a majority of these women in Mexico and Honduras by a background of non-insertion into the school system).

Finally, on comparing these two polar groups, we can see the magnitude of the disparity in their reproductive trajectory in the four countries analyzed. While among the socio-economic elite high fertility towards age 40 is virtually unknown, among the laggard groups it is majoritarian. At the beginning of the 21st Century, in the four countries under

study, women aged 35 to 39 years from the lower educational and socio-economic strata –a segment that represents more than a quarter of these women in Honduras, 14% in the five southern states of Mexico, and less than 8% in Costa Rica and Panama– had high fertility indices in 45% of the cases. However, the figures show a declining trend in the high fertility indicator in this group, confirming the idea of a cross-sectional reduction, even though Honduras doesn't join this trend. As a counterpart, the figures suggest that it is the elite that has undergone the most outstanding reductions in the probability of experiencing high fertility; in fact, the gap between the two polar groups broadened and currently reaches levels on the order of sixty-fold in the extreme cases (Panama and Mexico, 2000) (Table 6).

4.2. Responses in the face of high fertility at age 17

4.2.1. Establishing the couple

Union formation is an intervening variable for fertility and its effect has been modeled in different ways on the aggregate (Guzmán et al., 1996). For the individual, union formation usually precedes reproduction, however, it is evident that pregnancy may occur from casual sexual encounters or from relationships in couples that would be hard-pressed to be considered unions with a projection. Although these latter situations are infrequent, available evidence indicates that non-marital fertility is increasing (Upchurch, Lillard, and Panis, 2002); furthermore, in Latin America it is currently documented that among adolescent mothers the probability of being single and in fact lacking a partner is high and growing (Rodríguez, 2003; Flórez and Nuñez, 2002); in addition, there are indications that early maternity accelerates or pressures consolidation into more or less formal unions (CEPAL/CELADE, 2002). In this sense, the relationship between union formation and high early fertility can be read three ways from the vulnerability approach adopted in this paper: (a) the first and most classical is that we are dealing with an explanatory factor (intervening variable), since an early union anticipates early reproduction; (b) the second is that we are dealing with a factor that screens some of the adversities that are shared with precocious fertility, since, in principle, maternity under conditions of spinsterhood is more complicated (CEPAL/CELADE, 2002 and 2000; Flórez and Nuñez, 2002); (c) the third is that we are dealing with a possible strategy that may be adopted precisely to confront the challenges of child-rearing. The results obtained in this paper, and which are summarized in Table 4, suggest that in the countries examined, an ample majority of the adolescents that are mothers at age 17 are in union,¹¹ although the figures reveal important distinctions among and within the countries and, above all, a trend towards a reduction of marriage among those in union.

The five states in southern Mexico (2000) stand out due to the virtual universality of union among the 17 year-old mothers; while on the other hand, Costa Rica (2000)

¹¹ The calculation included those separated and widowed among those in union with the understanding that they experienced a union, even though it had been broken. In general, the number of 17 year-old mothers separated and widowed is scant, except in the Panamanian case (2000), where 17% of the non-single adolescents state they are separated.

presents the highest indices of single motherhood (one of every three). In diachronic terms, there are no signs of increase in single motherhood. In general, most of the unions are consensual, where the Panamanian case stands out (2000), insofar as legal marriage is virtually non-existent among the 17 year-old mothers. A suggestive finding, and one compatible with prior research (CEPAL/CELADE, 2000), is that single motherhood is more frequent among the early mothers from the upper stratum, although when they do enter a union, a larger proportion of them opt for marriage than occurs among the middle and lower strata. The greater frequency of single maternity in the upper stratum may be associated to more liberal modes of sexuality (although without an accompaniment of effective means for avoiding pregnancies) or greater options for parental support that reduce the need to “get a partner”; as a counterpart, the greater propensity to be in union among the precocious mothers from the lower stratum suggests that a persistent pattern of early unions, in general a relic of traditional conduct, is one of the sources for precocious fertility. In fact, the disparities among the socioeconomic extremes regarding union at age 17 are enormous (Table 7).

4.2.2. Family support

The family plays an important role in strategies destined to face high early fertility, because historically intergenerational ties have been operational with regards to child-rearing within the region (Ariza and de Oliveira, 2001; Arriagada, 2001; Salles and Tuirán, 1997; Lomnitz and Pérez, 1986) and, in particular, at age 17 the parental ties are fully active. There are many ways in which a family can contribute to handling the obligations imposed by precocious fertility (CEPAL/CELADE, 2002; Bruce, Lloyd, and Leonard, 1998), but the most powerful reason continues to be the shelter received at home. In fact, the relative frequency and the characteristics of the co-residential pattern—for example: viri- or matrilocal; in the same household, as separate households, or as different dwellings at the same site- depending on the adolescent’s material conditions, her partner (when there is one), and the parents of both, as well as cultural norms on emancipation of children and the residential scaffolding of kin relations (Robichaux, 2002).

The results presented in Figure 5 contribute to the hypothesis of the family’s response to the challenges from high early fertility, by means of domestic co-residence of the precocious mothers (their absorption rather than expulsion). It is worth noting that the figures underestimate co-residential habitation because they do not capture “living-in” in the family dwelling under the modality of a separate household. Even so, a large part, and in some countries a majority, of the 17 year-old mothers resides in their parents’ or in-laws’ household. Once again, the five southern Mexican states stand out because concomitantly with the virtually universal presence of a union among the 17 year-old mothers, they also register the lowest indices of parental co-residence (less than 40%) and the largest part of that co-residence occurs in the in-laws’ household—which adjusts to the family system that Robichaux (2002) stipulated for Meso-America, especially in the rural areas in southern México, one of whose traits is virilocation-, which does not occur in the rest of the countries, where most domestic co-residence occurs in the household of the girl’s parents, especially in Costa Rica, in association with higher

indices of single maternity, as mentioned above. Panama (2000) exhibits the highest index of domestic co-residence: one of every two 17 year-old mothers lives in her parents' or in-laws' household (Figure 5).

Although the figures are eloquent, they are not particularly high in the regional context, since in countries such as Chile (2002), "living-in" in parents' or in-laws' households is nearly 70% (Rodríguez, 2003). In addition, they do not show an increasing trend as has been seen in other countries (Rodríguez, 2003; CEPAL/CELADE, 2002). However, how can we interpret domestic co-residence among precocious mothers? A first reading suggests that we are dealing with a behavior appropriate to traditional modes of family formation.¹² Census results obtained in this paper do not support this thesis because it was precisely in Mexico where domestic co-residence of the 17 year-old mothers was the lowest; however, the limitations of the census information for capturing the complexity of family arrangements (crucial to Robichaux and other researchers) and above all, to capture family co-residence under the mode of separate households does not allow us to reach a definitive conclusion in this regard. A second interpretation aims at the survival strategies of the poor, who, faced by the challenge of child-raising at young ages have no other option but to remain in the family household, particularly that of their parents. Once again the evidence does not support that hypothesis because systematically, it is among the precocious mothers of the upper stratum where the highest rates of co-residence in the paternal or in-law's household are found. In fact, this does not mean that co-residence in the parental household is not used as a strategy among the poor, but it does suggest that there is a third interpretation for familial co-residence by precocious mothers, corresponding to a response supporting adolescents with access to life projects other than child-rearing and furthermore face their maternity with higher indices of spinsterhood (Figure 5).

4.2.3. Modifying a life trajectory: desert, work, or raise

What do adolescents do when they are precocious mothers? In terms of their main activity, they have three options: (a) "stay at home" and dedicate their time to household chores and child-rearing; (b) continue studying so that they require support in the child-care tasks; (c) work and thus pay for the child-rearing, although in this case they also need support for child-care. The three options are different responses in the face of a materialized risk. Previous research has underlined the scant viability of remaining in school and has emphasized the difficulties imposed by labor force insertion for a young mother (Rodríguez, 2003), so that the strongest hypothesis, for both cultural and material aspects, is that of household dedication of the adolescent mothers. In fact, this response has historical roots associated to traditional patterns of early union and reproduction but at present it tends to annul other life-time options for the girls. In the case of labor force insertion, the dividends that an untrained and unskilled adolescent can obtain from this are truly uncertain. Indeed, remaining in school would seem to be the response with the greatest perspectives for the future, but it requires the intervention of other players to support the adolescent, allowing her to juggle maternity and studies.

¹² Robichaux (2002), for example, states that the "Meso-American family system ... favors the formation of new couples without the need to rely on their own dwelling" (p. 59).

Among these players we find the State –both to avoid discrimination at school against precocious mothers, as well as providing material support for remaining at school, NGOs specialized in school retention for pregnant adolescents and those who are mothers, and the family that assumes some of the responsibilities for child-rearing, as was noted in previous sections.

The results from processing the census micro-data databases are highly suggestive regarding the effectiveness and social specificity of these responses in the countries analyzed. First of all, they confirm that the major activity profile for the adolescents differs markedly by their maternity condition: being a mother at age 17 is currently associated with a probability not less than 80% of being outside the school system, which is explained in an immense majority of cases by the fact that the main activity of the adolescents is “Housekeeping”, since their indices of labor force participation are insignificant (Figure 6a); in counterpoint, among the non-mothers, the majority is still studying and of those outside the school system, many are working (Figure 6b).

In order to control the “stratum effect” that distorts the relation between being a mother and main activity, we provide Figures 6a and 6b. From these, we can deduce that even after controlling for the effect of socio-economic situation, maternity is strongly associated with “staying at home”. In fact, a 17 year-old girl from the lower stratum, who is already a mother in Costa Rica or Panama (2000), has an almost non-existent probability of continuing at school; while for one who is not a mother from the same stratum, this proportion exceeds 30%. On the other hand, socio-economic stratum is not only a protective factor in the face of the risk of high early fertility, as mentioned above (Tables 4 and 5), it is also the factor that marks the difference in response to precocious maternity, which, above all in the case of continuing at school, implies the ability to attenuate adversity. In fact, one of every four 17 year-old mothers from the upper stratum continues to attend school in Panama. The five southern Mexican states follow a special pattern, fitting more closely a socially cross-sectional traditional early maternity, since in all of the socio-economic strata there is a broad predominance of “housekeeping” as their main activity.

Finally, we used the notion of educational trajectory to delve more deeply into the factors that allow alternate responses to “staying at home” for precocious mothers. Figure 7 shows that, with national specificities, the “educational history” of the 17 year-old adolescents, and in particular the mothers in that group, is strongly associated with the main activities carried out, even after controlling for socio-economic stratum. This ratifies the outstanding domestic “anchorage” linked to precocious maternity in the 5 southern Mexican states, since even among the 17 year-old mothers from the upper stratum (as shown in Figure 6b) and with a “normal” educational trajectory, school attendance does not surpass 10%. However, this is clearly not the situation in Costa Rica, Panama, and Honduras, where a majority of mothers from the upper stratum and a “normal” trajectory continue attending school (Figure 7). Furthermore, the precocious mothers with a lagged school trajectory (suggesting early drop-out from school) do not show a greater tendency to work; to the contrary, they have lower labor force participation rates than the mothers with a normal school trajectory. The main

conclusion is that a normal educational trajectory is a crucial antecedent for a response with a future perspective, which is to continue attending school, in spite of having become a mother. In diachronic terms, the results are not particularly encouraging, since there have been few advances in this type of response; and what is more, in some countries such as Honduras, incompatibility between maternity and school attendance seems to have become more acute.

4.3. Responses in the face of high fertility at age 35-39 years

Towards age 40, there are several responses to the demands of a numerous brood. The most traditional one is child-rearing support, which is usually sought from family members and neighbors or on the market through domestic employment. Censuses are not a suitable source of information for any of these three responses, at this age and in this condition of high fertility, family support does not usually operate through co-residentiality, and for this reason it is not captured by the census, the same is true of neighborly assistance; with regards to domestic help, the census also has problems capturing it, especially if it is *de jure*. The DHS series of surveys captures in a standardized manner the background with regards to child-rearing support when the woman is working, and available figures suggest that this support is relevant –first of all, it is provided by family members, in second place by the woman’s other daughters, and in third place by domestic help (www.measuredhs.com)-, but they refer to countries within the region not analyzed in this paper (Guatemala and Nicaragua). Furthermore, in a previous paper, an analysis was carried out at the regional level with regards to two responses adapted to a numerous family (but measured as the number of children in the household and not as parity above five). One was child labor and, in general, this was most probably among children in households with many children, even after controlling key socio-economic variables. Another was adult densification, whose results were less conclusive (Rodríguez, 2003).

However, of all possible results, those related to the three previous options mentioned for adolescents aged 17 (work, study, or stay at home) continue valid for women aged 35-39 years, although now expressed as a dichotomy: either work or stay at home, because continuing in the school system is no longer an option. Figure 8 allows us to conclude that: (a) between 70 and 85% (depending on the country and census considered) of high fertility women reaching age 40¹³ had as their main occupation “staying at home”, while for all women aged 35-39 years, this proportion varied between 45 and 65%; (b) in diachronic terms, high fertility women have followed this group’s trend in general and reduced slightly their levels of “main occupation at home”; (c) in the seven cases analyzed, there is a systematic increase in the probability of having their major occupation as “staying at home” with a concomitant increase in the numbers of their surviving children, since a majority of those that have one or two surviving children towards their 40th birthday are working; (d) socio-economic condition has an effect on

¹³ In this case, the variable used was that of surviving children to ensure capture of the contemporaneous effect of reproductive intensity. Similarly, the figures exclude women with 0 children since we are not dealing with nulliparous ones, only those women who had children that died. The calculations for the nulliparous women, who make up a minimal group in the four cases analyzed, show proportions for “homemaker” below those for women with children even after controlling number of children, stratum, years of schooling, and household headship.

this response in the face of high fertility, since the probability of having as a main occupation “staying at home” is lower among those from the upper stratum, which suggests the existence of support mechanisms allowing them to juggle labor force participation and child-rearing; (e) among the strata there are significant differences, since number of children seems to play a secondary role in the decision to stay at home in the lower stratum; levels by different numbers of surviving children vary little. The contrary occurs in the upper stratum, where the ratios of disparity among women with one surviving child and those with high fertility are on the order of 2. Thus, although they have more mechanisms to share child-rearing and work, number of children has a greater influence on the tendency to participate among upper stratum women than those from the lower stratum.

5. CONCLUSIONS and POLICY DISCUSSION

In 2001, four of every ten Honduran and three of every ten Mexican women aged 35 to 39 years had had 5 or more children, and in both cases a broad majority of these high fertility women had minimal or no education, suggesting weak bases for incorporating human capital development during the child-rearing process; furthermore, data on the women around age 40 for the four countries studied show that among those belonging to the most disadvantaged groups, numerous offspring continue to be the norm. In contrast, diachronic analysis shows that high fertility towards age 40 affects a declining fraction of the women and that all social groups (with the partial exception of Honduras) have experienced a decline in these levels, although the intensity of the decline has been greater among the elite. Thus, there is a reasonable expectation that this risk will slowly be attenuated in view of the ability for couples, and particularly women, to control higher order births.

In policy terms, these results present numerous challenges. The first is related to satisfying family planning needs for the majority of women that are already controlling the intensity of their reproductive trajectory; this control occurs primordially among the women that have accumulated a certain number of children (mostly between two and three in countries such as Costa Rica and Panama) and according to other studies (del Popolo and Bay, 2003; United Nations, 2002; CEPAL/CELADE, 1998; Guzmán et al., 1996) occurs as a result of public and/or private services providing contraceptives, whose role, therefore, is not devalued by the fertility decline. The second challenge is related to the “hard cores” of high fertility, which continue to be found among the most disadvantaged sectors and whose behavior seems to be associated simultaneously with exclusion and traditional cultural patterns. Breaking down this exclusion includes increasing the coverage and retention of the school system, since evidence suggests that completion of the basic cycle marks a point of inflection for the probability of having numerous offspring. It also runs through the radius of action of family planning and sexual and reproductive health programs, which are worth doing considering the cultural specifications of high fertility, particularly among the indigenous population, and the limitations that formal systems have for reaching groups where functional or total illiteracy is still widespread. The third is related to the household response to numerous

offspring, within which domestic clausturation of the women stands out, so a sustained decline in the probability of experiencing this risk means we should foresee an increase in female labor force participation, which in turn is related to income flows in households, a release from conditions of poverty, and female empowerment. However, the data suggest that upper strata female labor force participation would be the most “sensitive” to a reduction in high fertility (and number of offspring in general) so that increasing labor force participation among poorer women would seem to require more change than a simple decline in their high fertility indices (or final parity, in general).

In the case of high fertility among 17 year-olds, the figures are eloquent: it is increasing, it continues to affect disadvantaged groups to a much greater extent, maternity is expanding under conditions of co-habitation (although not as singles, as occurs in other countries throughout the region), it has a bearing on three generations –obviously the dyad mother (father) –child, but also the family, particularly the parents and in-laws of the precocious mothers- and presents a very tight association with the option to “stay at home”, instead of continuing to study or working. Thus, there can be no doubt that we are dealing with a current risk whose adversities are growing, especially due to the sustained importance of the school formation process for later labor force insertion. Its relevance could be reduced due to the fact that it affects a smaller proportion than that affected by numerous offspring towards age 40 (Tables 1a and 3), but that is not correct, since if we were to consider maternity throughout adolescence (before age 20), prevalence would surpass 30% in some countries. We could also question its relevance due to the fact that high early fertility does not always lead to an intense fertility trajectory; however, precisely because of that it is acknowledged as being more important, since it tends to erode the dividends in reducing numerous offspring.

Although we could deduce from the aggregate data that educational advances have been powerless to restrain high fertility, since increased fertility has been concomitant with a rise in average schooling in all socio-economic groups among females aged 17 years (Figure 9), the analysis at the individual level suggests exactly the contrary, since not only does schooling significantly reduce the probability of precocious maternity, but also, having a normal educational trajectory at age 17 exercises a powerful school “retainer” effect among the mothers. In fact, this analysis provides a precautionary note: not just any increase in education for women will be sufficient. Since only after passing a threshold in years of study will there be a sustained drop in the probability of having been a mother at age 17 or before. In policy terms, the evidence provided here suggests that school retention is one of the most powerful mechanisms for avoiding early fertility; early departure from the school system is associated with high fertility at age 17 years (albeit bi-directionally), while completing the schooling cycle (completed secondary education) is a virtual guarantee of being nulliparous at 17 years. Universalizing secondary education is, therefore, one instrument for preventing this socio-demographic risk, although the systematic evidence in this document and in prior papers indicates that it is insufficient. This is the case since increased education tends to delay a union, but does not necessarily do the same with sexual initiation (Rodríguez, 2003; Contreras, Guzmán, and Hakkert, 2001). Expressed in simple terms: more educated female adolescents does not mean less sexually-active adolescents,

although it does imply a different context (less nuptial) for their sexuality; in any case, it demands access to specialized sexual and reproductive health services, whose presence can have a much greater effect on more educated adolescents.

The use of census data provides evidence of greater relevance for policy effects: although clearly education and socio-economic situation condition the probability of experiencing high fertility in such a way that more disadvantaged women are more likely to do so, this does not mean that the majority of high parity women have received a scant education. In particular, in Costa Rica and Panama, most of the 17 year-old mothers have completed basic education; thus, even though it represents a scant basic education, and one that was probably truncated, nevertheless, it involves a cumulative set of concepts and experiences that can be taken into consideration in designing interventions aimed at this group. The case in México and Honduras is totally different, where the majority lacks education, which suggests a childhood in precarious conditions.

Finally, at the level of responses to high fertility, this paper has only begun the exploration, but it has already provided a stylized result: save for exceptional situations, such as a normal educational trajectory, the conduct associated with high fertility women is to “stay at home”, out of school (in the case of the 17 year-old adolescents, although not forcibly because of it, since the relationship is frequently the inverse) and out of the labor force. The support options in the labor market, the community, or the family can help face child-raising, but do not avoid domestic clausturation of these women.

BIBLIOGRAPHY

- Andersen L. (2003), **Population and poverty projections for Nicaragua, 1995-2015**, January, Final Consulting Report with the *Equipo de Apoyo Técnico para América Latina* from UNFPA (landersen@ucb.edu.bo).
- Ariza M. and O. de Oliveira (2001), “*Transición de la familia y cambios conceptuales en la investigación*”, **Papeles de Población**, Año 7, No. 28, p. 9-39.
- Arriagada, I. (2001), **Familias latinoamericanas. Diagnóstico y políticas públicas en los inicios del nuevo siglo**, Santiago, CEPAL, Serie Políticas Sociales, No. 57, LC/L.1652-P.
- Attanasio, O. and M. Székely (2003), **The family in flux: household decision-making in Latin America**, Washington, IDB.
- Birdsall, N. and S. Sinding (2001), **Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World**, New York, Oxford University Press.
- Bongaarts, J. (2002) “*The end of the fertility transition in the Developed World*”, **Population Development Review**, 28(3):419-443.
- Bruce, J., C. Lloyd, and A. Leonard (1998) **La familia en la mira: nuevas perspectivas sobre madres, padres e hijos**, México, D.F., Population Council (Oficina Regional para América Latina and el Caribe).
- Bulatao, R. and J. Casterline (editores) (2001), “*Global Fertility Transition*”, **Population and Development Review**, Population Council, Estados Unidos, Suplemento del Volumen 27.
- CEPAL/CELADE (Comisión Económica para América Latina y el Caribe y Centro Latinoamericano y Caribeño de Demografía) (2002), **Vulnerabilidad sociodemográfica: viejos y nuevos riesgos para comunidades, hogares y personas**, Santiago, LC/R.2086.
- _____, (2000) **Juventud, población y desarrollo en América Latina y el Caribe**, Santiago de Chile, LC/L.1339.
- _____, (1998), **Población, salud reproductiva y pobreza**, Santiago, LC/G.2015(SES.27/20).
- _____, (1995), **Población, equidad y transformación productiva**, Santiago, CEPAL, Serie E, CELADE, No. 37, LC/G.1758/Rev.2-P; LC/DEM/G.131/Rev.2.
- Chackiel, J. and S. Schkolnik (1998), **América Latina: la transición demográfica en los países rezagados**, Santiago, CELADE, Serie B, No. 124.
- Contreras, J., J. Guzmán, and R. Hakkert (2001) **Diagnóstico sobre salud sexual y reproductiva de adolescentes en América Latina y el Caribe**, México, FNUAP.
- Emerson, P. and A. Portela (2003), “*Is there a child labor trap? Intergenerational Persistence of Child Labor in Brazil*”, **Economic Development and Cultural Change**, Volume 51, No. 2, p. 375-398.
- Fischhoff, B., E. Nightingale, and J. Iannotta (editors) (2001), **Adolescent Risk and Vulnerability: Concepts and Measurement**, Washington D.C., National Academy Press, <http://books.nap.edu/books/030907620X/html/index.html>.

- Flórez, C. and Nuñez, J. (2002), **Teenage childbearing in Latin American countries**, Bogotá, CEDE, Universidad de Los Andes, Documents CEDE 2002-01.
- Guzmán, J., S. Singh, G. Rodríguez, and E. Pantelides (1996), **The fertility transition in Latin America**, International Union for the Scientific Study of Population, Clarendon Press Oxford, United States.
- Guzmán, J. M. (1997), “*El aporte latinoamericano al análisis de los factores determinantes de la fecundidad*”, **Notas de Población**, Año 25, No. 66, p. 87-107.
- Hobcraft, J. and K. Kiernan (2001), “*Childhood poverty, early motherhood and adult social exclusion*”, **The British Journal of Sociology**, Volume 52, No. 3, p. 495-517.
- Johnson, K., H. Banghan, and W. Lyao (1998), “*Infant abandonment and adoption in China*”, **Population and Development Review**, Volume 24, No. 3, p. 469-510.
- Juárez, F. and S. Llera (1996), “*The process of family formation during fertility transition*”, in Guzmán and otros, **op. cit.**, pages 48-73.
- Lindstrom, D. and C. Brambila (2002), “*Alternative theories of the relationship of schooling and work to family formation: evidence from Mexico*”, **Social Biology**, Volume 48, Nos. 3 and 4, p. 278-297.
- Lipton, M. (1995), “*Population and poverty: how do they interact*”, en IUSSP, **Seminar on Demography and Poverty. Papers**, Liege, IUSSP, p. 1-31.
- Livi-Bacci, M. (1995), “*Pobreza y población*”, **Notas de Población**, n. 62 -o- Pensamiento Iberoamericano, n. 28, p. 115-138.
- Lomnitz, L. and M. Pérez (1986), *La gran familia como unidad básica solidaridad en México*, en **Anuario Jurídico, XI Primer Congreso Interdisciplinario sobre la Familia Mexicana**, Instituto de Investigaciones Jurídicas, Universidad Nacional Autónoma de México, México.
- MacDonald, P. (2002), **Sustaining fertility through Public Policy: The Range of Options**, **Population** (original French), No. 57, Volume 3, p. 417-446.
- Martínez, J. (1999), **Población y pobreza: contenidos paradigmáticos para la demografía**, Louvain, Université Catholique de Louvain, Institut de Demographie, Bruylant-Academe.
- Merrick, T. (2002), **Population and Poverty: New Views on an Old Controversy**, www.guttmacher.org/pubs/journals/2804102.html.
- Pebley, A. and L. Rosero (editors) (1997), **Demographic diversity and change in the Central American Isthmus**, Santa Monica, CA, Rand.
- Ribero, R. (2001), “*Estructura familiar, fecundidad y calidad de los niños en Colombia*”, **Desarrollo y Sociedad**, No. 47, p. 1-43.
- Rindfuss, R., K. Brewster, and A. Kavee (1996), “*Women, work, and children in the US*”, **Population and Development Review**, Volume 28, No. 4, December, p. 457-482.
- Robichaux, D. (2002), **El sistema familiar mesoamericano y sus consecuencias demográficas: un régimen demográfico en el México indígena**, Papeles de Población, No. 32, p. 59-94.
- Rodríguez, J. (2003), La fecundidad alta en América Latina y el Caribe: un riesgo en transición, documento presentado al seminario **La Fecundidad en América Latina**

y el Caribe: ¿Transición o Revolución, Santiago de Chile, Sede de la CEPAL, June, 9–11, 2003.

_____ (2001), “*Juventud, reproducción y equidad*”, en Solum Donas (compiler), **Adolescencia y juventud en América Latina**, LUR, Costa Rica, p. 363-390.

Salles, V. and R. Tuirán (1997) “The family in Latin America: a gender approach”, **Current Sociology**, Vol. 45, No. 1, p. 141-152.

Stecklov, G. (1997), “*Intergenerational resource flows in Côte d’Ivoire*”, **Population and Development Review**, Volume 23, No. 3, p. 525-553.

United Nations (2003), **Population, education and development. The concise report**, New York, ST/ESA/SER.A/226.

_____ (2002), “**Expert Group Meeting on completing the fertility transition**”, documents presented to the meeting (n.d.), New York, March 11-14 , 2002.

_____ (2001), **World Population Prospects**, New York, ST/ESA/SER.A/198.

_____ (1983). *Manual X. Indirect Techniques of Demographic Estimation* (United Nations publication, ST/ESA/SER.A/81).

UNFPA (2003), **Estado de la Población Mundial. Inversiones en salud y sus derechos**. New York.

Upchurch, D., L. Lillard, and C. Panis (2002), “*Nonmarital childbearing: influences of education, marriage and fertility*”, **Demography**, volume 39, No. 2, p. 311-329.

Table 1a. Females Aged 17 Years: Total, Don't Know or Non-Response (DK/NR) When Asked About Live Born Children, and Responding that They Have Had Children, by Country and Selected Years (Absolute and Relative Figures)

Countries and Census Years	Absolute values				Percent		
	DK/NR	Total	Total excluding women that DK/NR	With children	DK/NR	With children ^{a/}	With children ^{b/}
Costa Rica, 2000	7 137	38 367	31 230	4 522	18.6	11.8	14.5
Costa Rica, 1984	8 797	28 704	19 907	3 117	30.6	10.9	15.7
Honduras, 2000	-	69 033	-	11 781	0.0	17.1	-
Honduras, 1988	196	45 582	45 386	7 766	0.4	17.0	17.1
Mexico (5 States), 2000	2 605	104 298	101 693	14 597	2.5	14.0	14.4
Mexico (5 States), 1990	15 969	83 950	67 981	10 866	19.0	12.9	16.0
Panama, 2000	915	26 967	26 052	4 363	3.4	16.2	16.7

Source: Special runs with REDATAM on the respective census micro-data databases; in the Honduran case, on-line processing from (www.ine-hn.org/).

Note: In Honduras (1988), the category "Unknown" on the question on number of children born live (672 cases) corresponds to women declaring having had children, but not knowing how many; all these cases were classified as mothers. Those appearing as DK/NR are those that did not respond to the question on whether they had children or not. Census micro-data includes them among women with parity zero in the question on number of children. In Panama 1990 DK/NR includes 9 cases classified as "Does not apply."

Table 1b. Females Aged 35-39 Years: Totals, Non-Respondent or Don't Know (DK/NR) When Asked for Live-Born Children, by Country and Selected Years. (Absolute and Relative Figures)

Countries and Census Years	Absolute values				Percent		
	DK/NR	Total	Total excluding women that DK/NR	With children	DK/NR	With children ^{a/}	With children ^{b/}
Costa Rica, 2000	3 491	147 652	144 161	132 601	2.4	89.8	92.0
Costa Rica, 1984	1 858	66 257	64 399	59 833	2.8	90.3	92.9
Honduras, 2000	-	163 810	-	148 877	-	90.9	-
Honduras, 1988	192	104 867	104 675	95 566	0.2	89.8	92.0
Mexico, 2000	1 150	291 540	290 390	267 940	0.4	91.9	92.3
Mexico, 1990	7 947	199 194	191 247	179 494	4.0	90.1	93.9
Panama, 2000	609	98 820	98 211	88 566	0.6	89.6	90.2
Panama, 1990	1 333	69 494	68 161	63 881	1.9	91.9	93.7

Source: Special runs with REDATAM on the respective census micro-data databases.

Note: In Honduras (1988), the category "Unknown" on the question on number of children born live (672 cases) corresponds to women declaring having had children, but not knowing how many; all these cases were classified as mothers. Those appearing as DK/NR are those that did not respond to the question on whether they had children or not. Census micro-data included them among women with parity zero in the question on number of children. In Panama 1990 DK/NR includes 119 cases classified as "Does not apply."

Table 2. Females Aged 17 Years: Percent of School Non-Attendance by Response to the Question on Children Born Live

	Costa Rica		Honduras		Mexico		Panama	
	1984	2000	1988	2000	1990	2000	1990	2000
Without children	60.5	39.8	58.8	-	60.6	53.6	36.8	27.3
With children	94.6	86.0	88.7	-	95.2	96.2	89.9	84.0
DK/NR	58.6	34.9	65.8	-	59.4	57.0	33.3	24.8

Source: Special runs with REDATAM on the respective census micro-data databases.

Table 3. Females Aged 35 to 39 years by Children Born Live (Percent of Women with 5 or More Children as Indicator of High Fertility) by Countries and Years Studied

Countries and years	Without children	1 child	2 children	3 children	4 children	5 or more children	DK/NR	Total
Costa Rica, 2000	8	11	24	25	14	15	2	100
Costa Rica, 1984	7	9	17	20	15	30	3	100
Honduras, 2000	9	7	13	17	15	38	0	100
Honduras, 1988	9	5	8	11	12	51	5	100
Mexico, 2000	8	7	18	22	15	30	0	100
Mexico, 1990	6	5	11	16	14	44	4	100
Panama, 2000	10	13	24	23	12	18	1	100
Panama, 1990	6	9	20	23	14	26	2	100

Source: Special runs with REDATAM on the respective census micro-data databases.

Table 4. Disparity Ratios in the High Fertility Index at Age 17 Years, Between Lower and Upper Strata by Years of Schooling (Upper Stratum is Reference)

Years of schooling	Costa Rica, 2000	Costa Rica, 1984	Honduras, 2000	Honduras, 1998	Mexico, 2000	Panama, 2000	Panama, 1990
0	6.5	23.2	9.2	4.8	2.2	8.2	3.3
1	1.5	3.9	12.2	5.5	1.7	6.4	1.9
2	9.2	3.1	13.7	2.3	4.9	9.1	3.4
3	2.3	2.0	11.0	4.0	1.4	1.5	2.3
4	1.9	2.6	13.1	42.0	1.3	5.4	4.4
5	1.8	3.0	13.1	3.0	2.3	3.3	4.8
6	2.1	2.6	10.3	2.9	1.2	2.5	2.9
7	1.7	2.8	7.0	1.3	0.5	1.8	2.3
8	2.0	2.4	8.3	1.7	1.3	1.5	1.7
9	2.1	2.1	5.9	1.2	1.8	1.9	1.5
10	3.3	1.8	1.8	1.5	2.6	2.0	2.1
11	3.5	1.5	1.8	1.1	0.4	2.3	2.1

Source: Special runs with REDATAM on the respective census micro-data databases.

Table 5. Females Aged 17 Years from Two Extreme Socio-Economic Groups: Total and Mothers (Absolute and Relative Numbers)

	Low-low group			High-high group			Gap	Total	% LLG	%HHG
	Mothers	All	Percent mothers	Mothers	All	Percent mothers				
Costa Rica 1984	494	1 618	30.5	106	4 833	2.2	13.9	28 623	5.7	16.9
Costa Rica, 2000	873	2 430	35.9	100	7 979	1.3	28.7	38 274	6.3	20.8
Honduras, 1988	4 329	15 726	27.5	40	1 748	2.3	12.0	45 582	34.5	3.8
Honduras, 2001	3 626	11 406	31.8	122	6 044	2.0	15.7	68 607	16.6	8.8
Panama, 1990	774	1 728	44.8	114	6 020	1.9	23.7	19 137	9.0	31.5
Panama, 2000	804	1 654	48.6	210	7 317	2.9	16.9	26 728	6.2	27.4
Mexico, 2000	3 093	9 854	31.4	255	17 644	1.4	21.7	103 553	9.5	17.0

Source: Special runs with REDATAM on the respective census micro-data databases.

Note: Low-low group: Lower stratum and low education (0-4 years); High-high group: Upper stratum and high education (10 or more years).

Table 6. Females Aged 35 to 39 Years from Two Extreme Socio-Economic Groups: With High and Total Fertility and Gaps between Both Groups (Absolute and Relative Numbers)

	Low-low group			High-high group			Gap	Total	% LLG	%HHG
	Women with high fertility	All women	Percent of women with high fertility	Women with high fertility	All women	Percent of women with high fertility				
Costa Rica 1984	6 441	11 081	58.1	316	5 877	5.4	10.8	66 038	16.8	8.9
Costa Rica, 2000	4 798	10 367	46.3	408	20 680	2.0	23.5	143 899	7.2	14.4
Honduras, 1988	37 012	54 032	68.5	97	1 754	5.5	12.4	99 896	54.1	1.8
Honduras, 2001	28 746	41 963	68.5	297	7 690	3.9	17.7	148 414	28.3	5.2
Panama, 1990	5 817	8 246	70.5	165	9 394	1.8	40.2	66 611	12.4	14.1
Panama, 2000	4 649	7 327	63.5	177	16 995	1.0	60.9	96 033	7.6	17.7
Mexico, 2000	22 035	40 214	54.8	240	26 567	0.9	60.7	272 737	14.7	9.7

Source: Special runs with REDATAM on the respective census micro-data databases.

Note: Low-low group: Lower stratum and low education (0-4 years); High-high group: Upper stratum and high education (10 or more years).

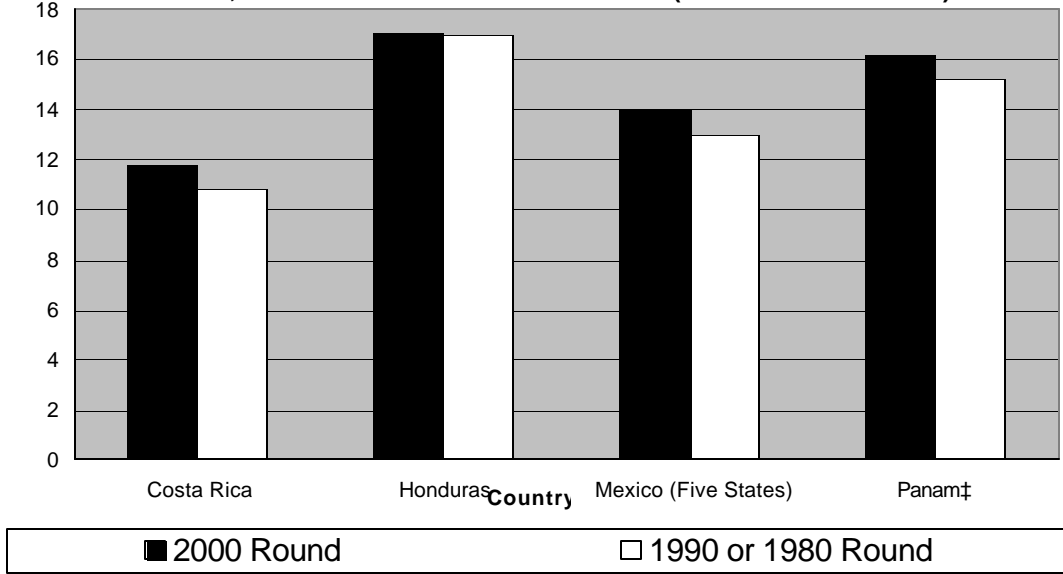
Table 7. Females Aged 17 Years Married, Living Together, In Union (Married + Living Together), and Total, Percent In Union, and Proportion of those Living Together Within Those In Union, by Two Polar Socio-Economic Groups, By Country for Selected Dates

Lower Stratum and Low Education						
Countries and years	Married	Living together	In union	Total women	Percent in union	Proportion living together within total in union
Costa Rica 1984	154	378	532	1 618	32.9	71.05
Costa Rica, 2000	129	870	999	2 430	41.1	87.09
Honduras, 1988	1 363	4 077	5 440	15 726	34.6	74.94
Honduras, 2001	603	3 763	4 366	11 406	38.3	86.19
Panama, 1990	43	917	960	1 654	58.0	95.52
Panama, 2000	72	941	1 013	1 728	58.6	92.89
Mexico, 2000	1 635	2 485	4 120	9 854	41.8	60.32
Upper Stratum and High Education						
Countries and years	Married	Living together	In union	Total women	Percent in union	Proportion living together within total in union
Costa Rica 1984	134	11	145	4 833	3.0	7.6
Costa Rica, 2000	59	37	96	7 979	1.2	38.5
Honduras, 1988	30	20	50	1 748	2.9	40.0
Honduras, 2001	66	98	164	6 044	2.7	59.8
Panama, 1990	67	100	167	6 020	2.8	59.9
Panama, 2000	30	182	212	7 317	2.9	85.8
Mexico, 2000	263	269	532	17 644	3.0	50.6

Source: Special runs with REDATAM on the respective census micro-data databases.

Note: Low education: 0-4 years; High education: 10 or more years.

Figure 1a
Evolution of High Fertility at Age 17 Years Considering All Women, 4 Countries, Census Rounds for 1990 and 2000 (Costa Rica 1984-2000)



Source: Special runs with REDATAM on respective census micro-data (source used for all of the figures).

Figure 1b
Evolution of High Fertility at 35-39 Years Considering all Women, 4 Countries, and Census Rounds for 1990 and 2000 (Costa Rica 1984-2000)

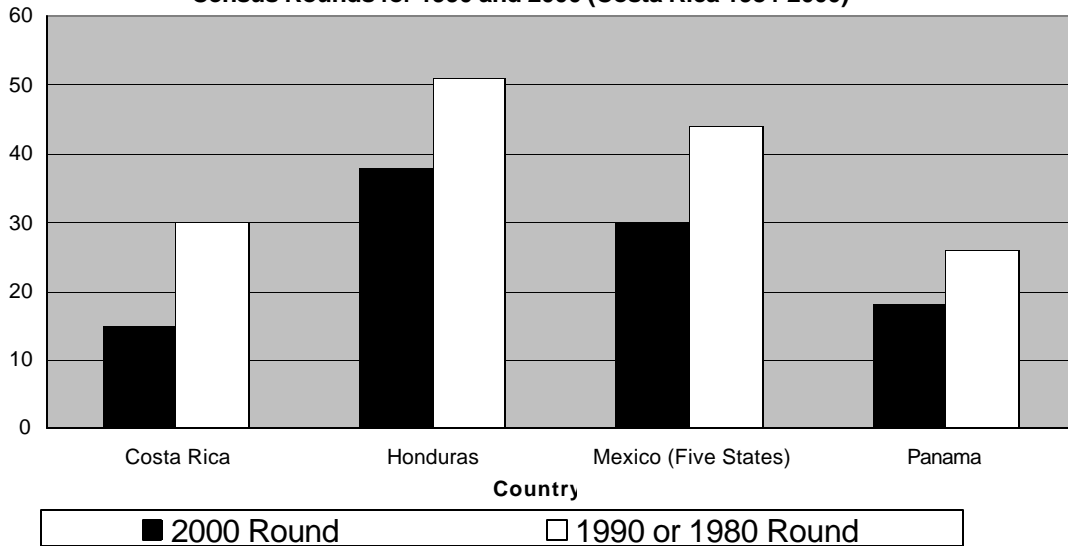


Figure 2: Percent of Women Aged 17 Years with High Fertility by Schooling

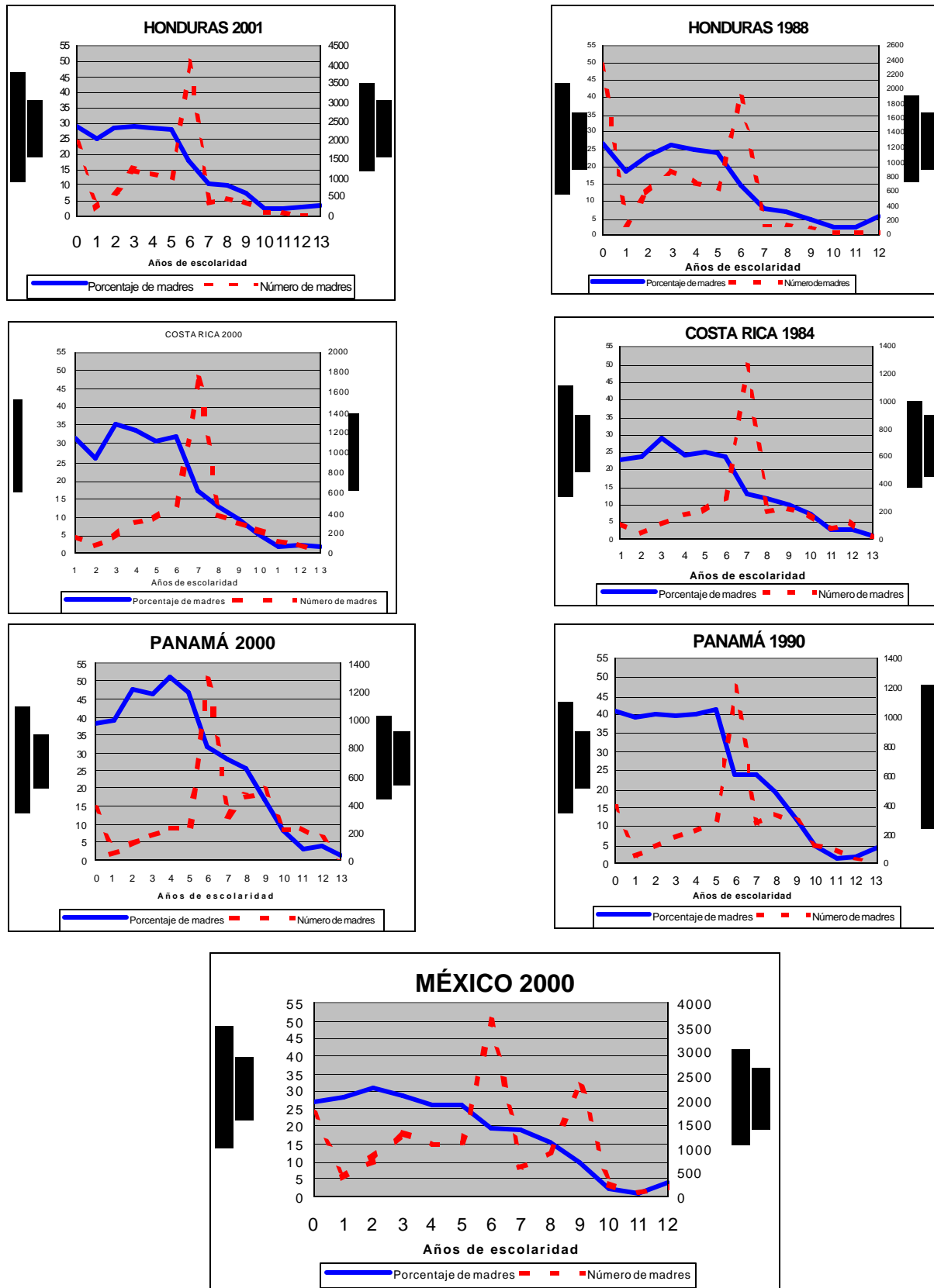


Figure 3: Percent of Women 35-39 Years of Age With High Fertility by Schooling and Stratum

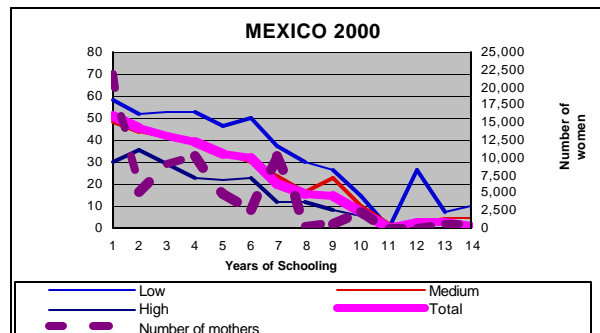
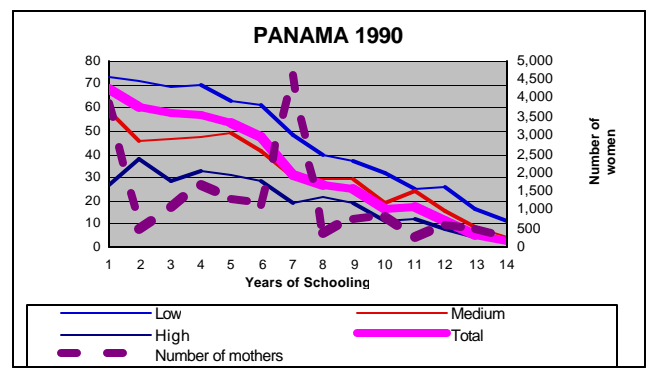
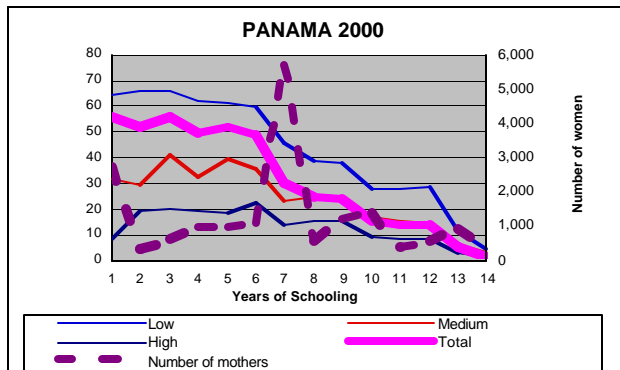
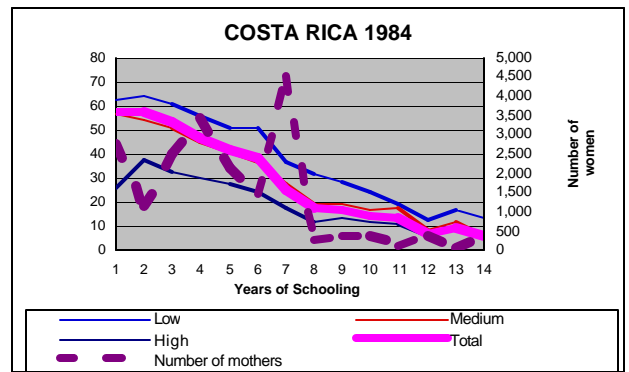
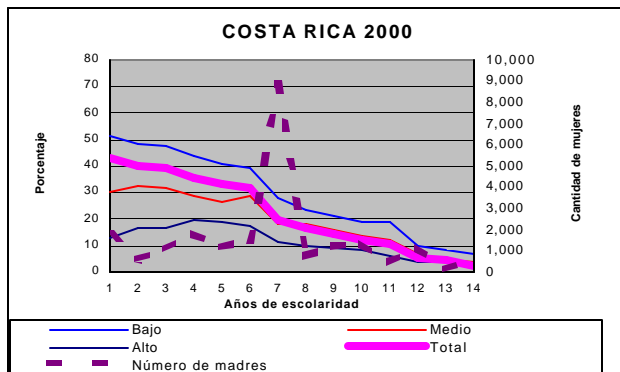
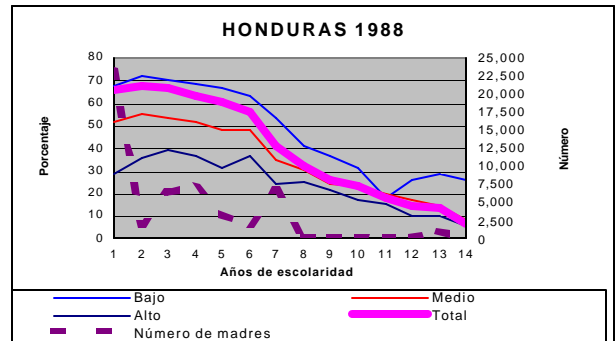
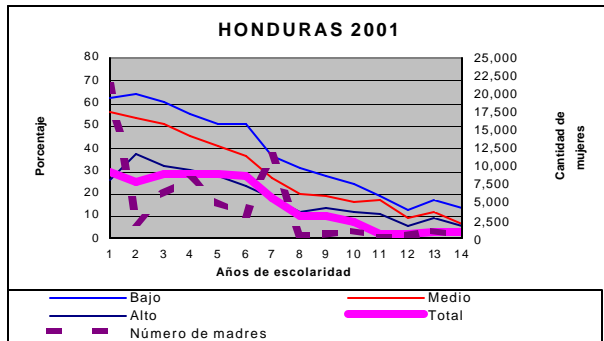


Figure 4
 Mothers Aged 17 Years: Percent Non-Single and Percent Married among the Non-Single
 by Socio-Economic Stratum, by Countries and Selected Years

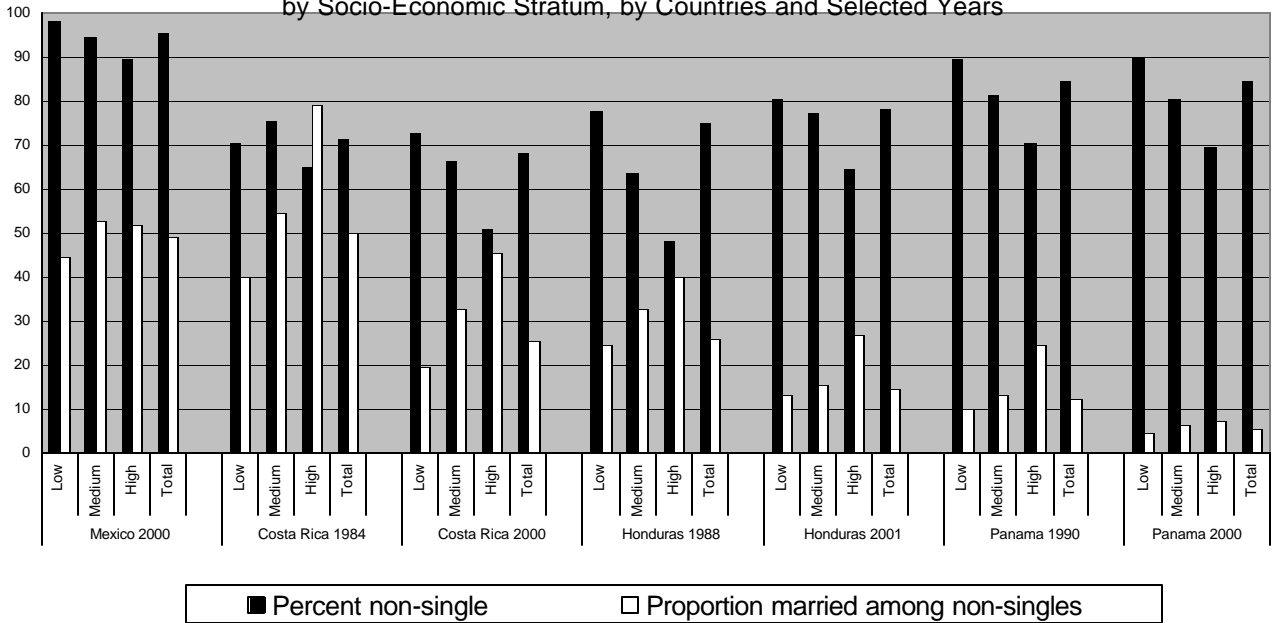


Figure 5
 Mothers Aged 17 Years: Kinship Relations with Head of Household where Residing by !
 According to Country and Selected Years

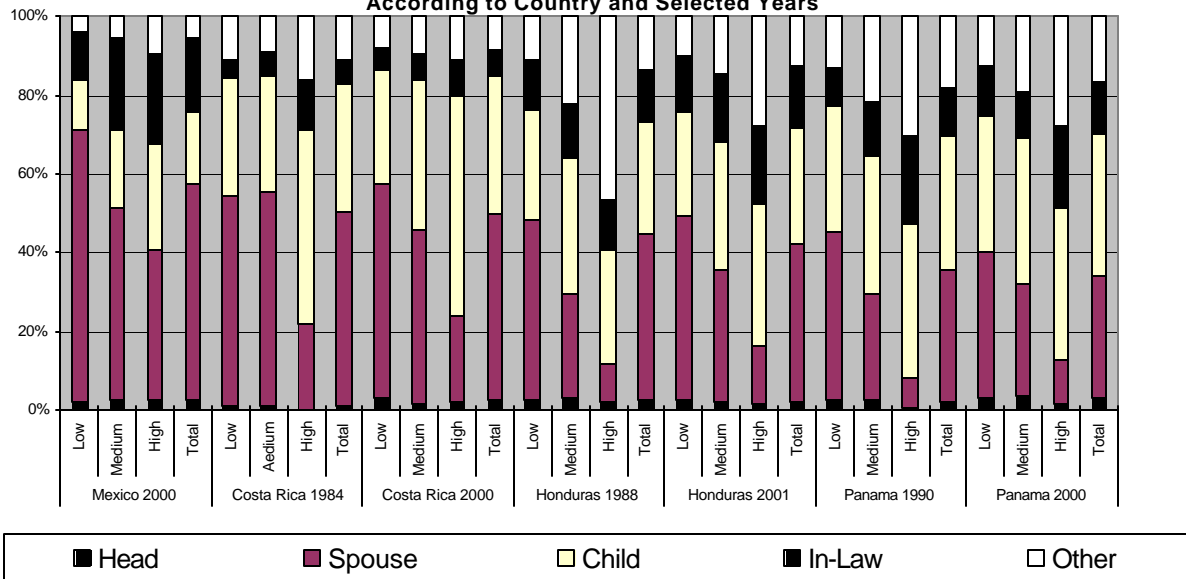


Figure 6a
Adolescents Aged 17 Years, Not Mothers: Main Activity by Socio-Economic Stratum

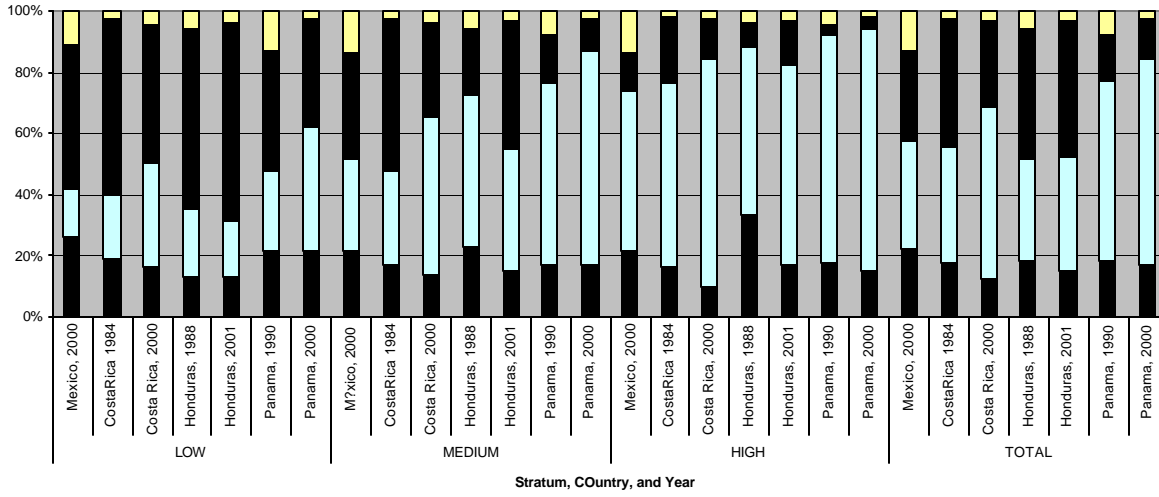


Figure 6b
Mothers Aged 17 Years: Main Activity by Socio-Economic Stratum

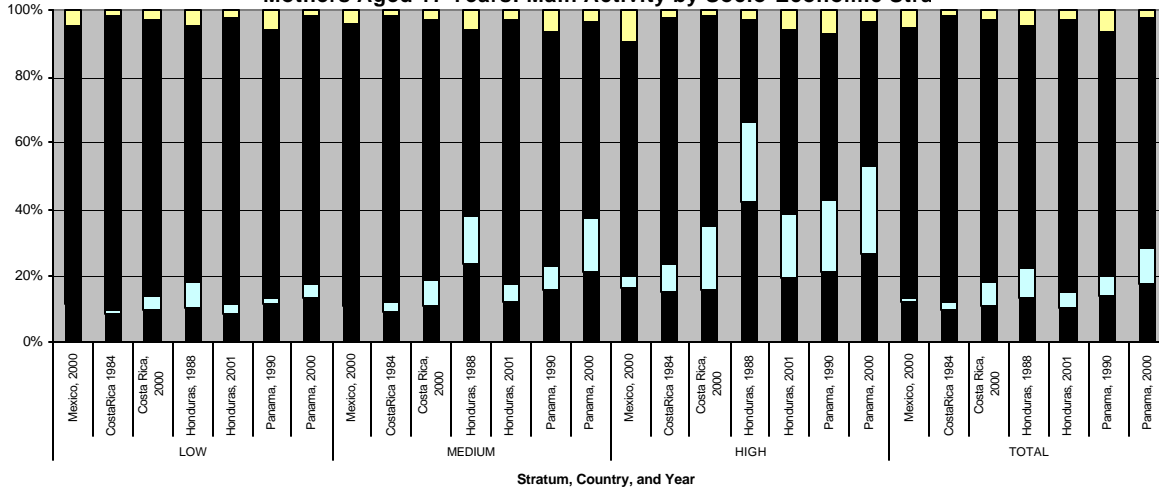


Figure 7
Mothers Aged 17 Years: Main Activity by Socio-Economic Stratum and Educational Trajectory, Countries and Selected Dates

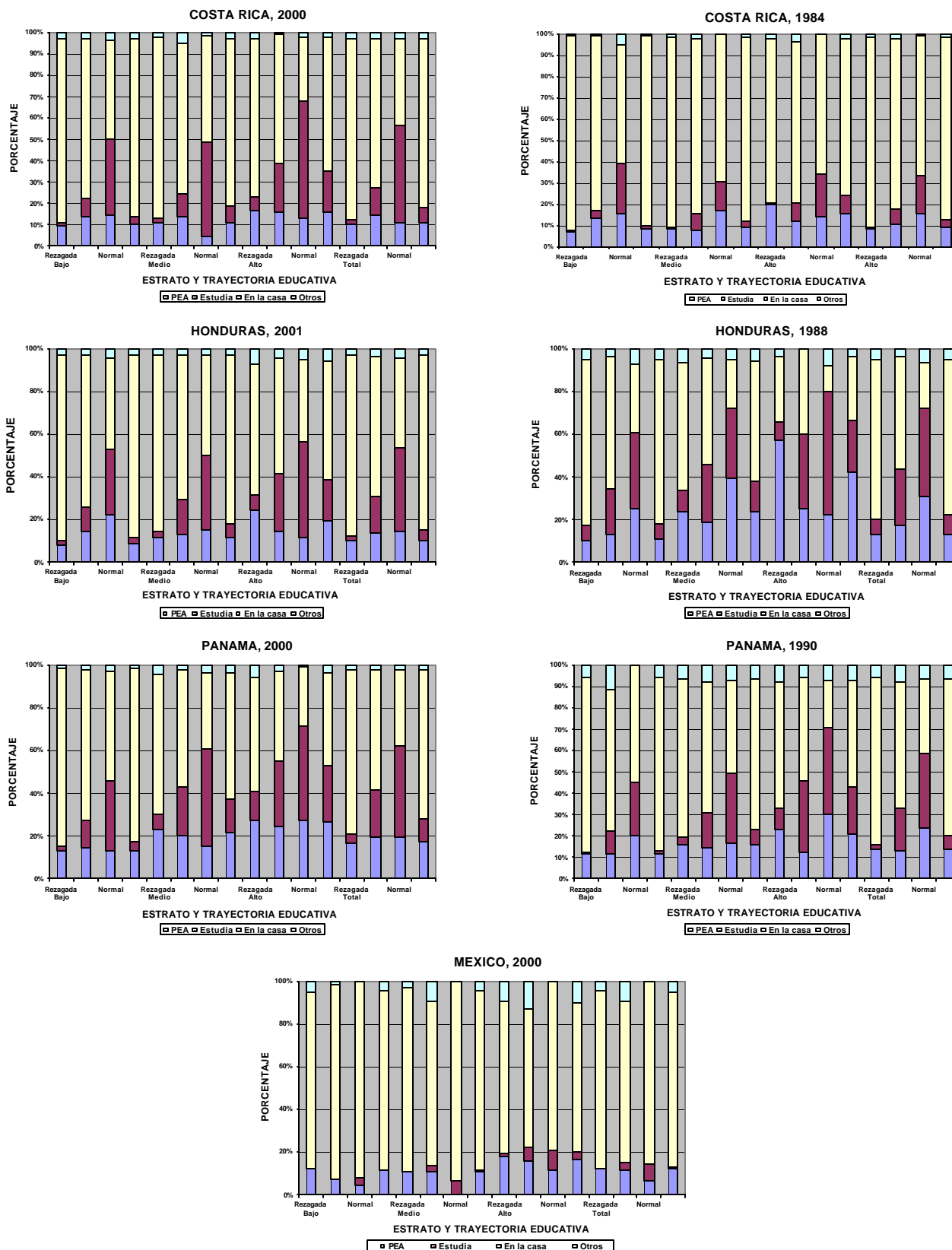


Figure 8

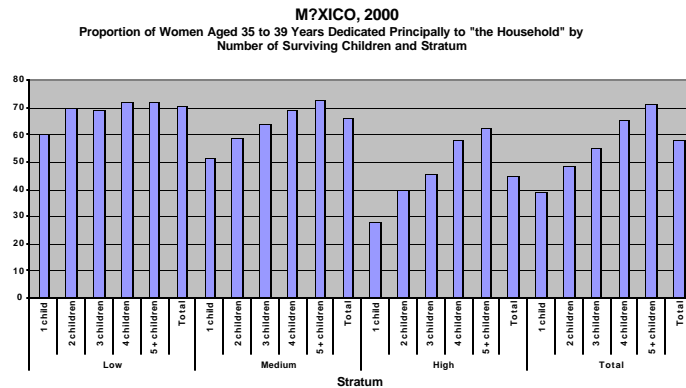
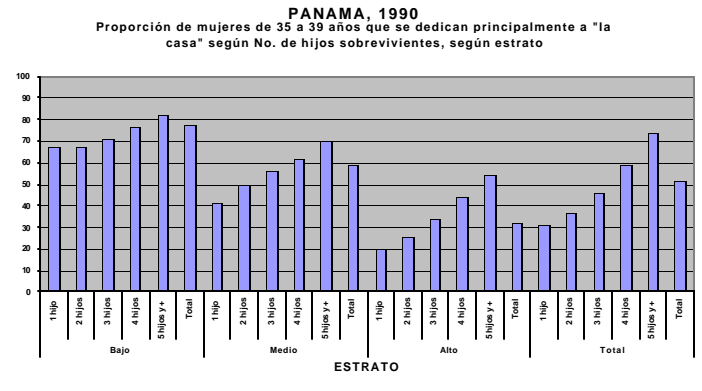
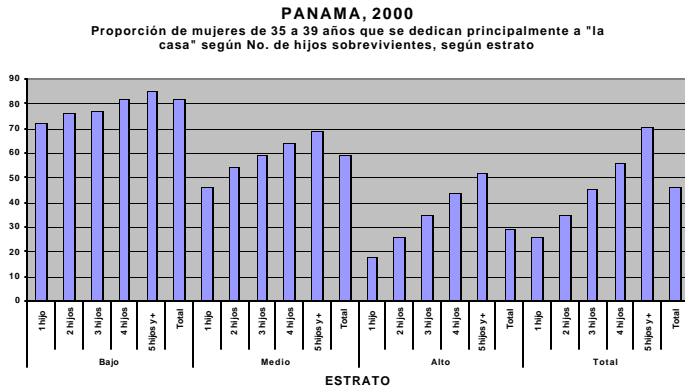
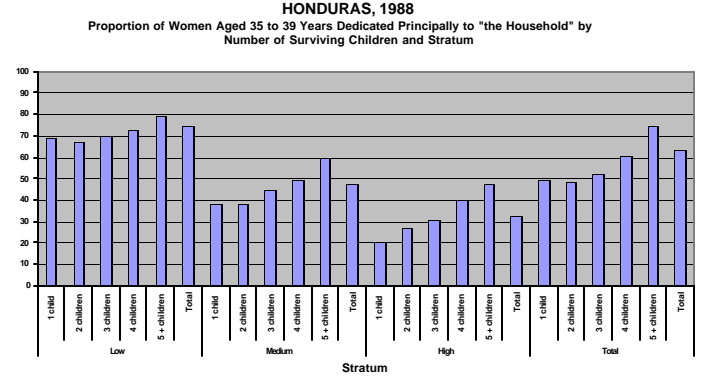
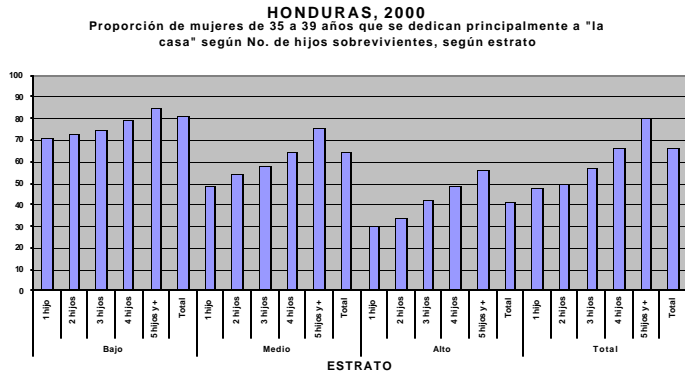
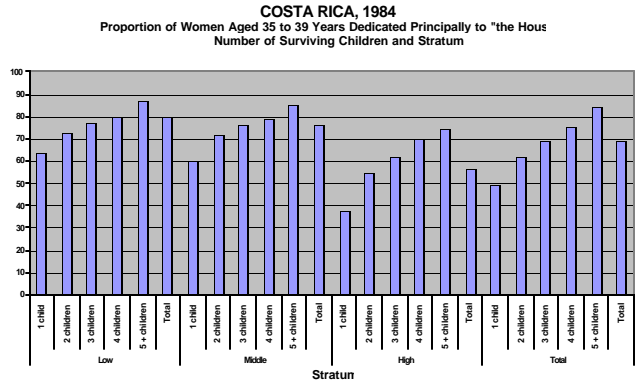
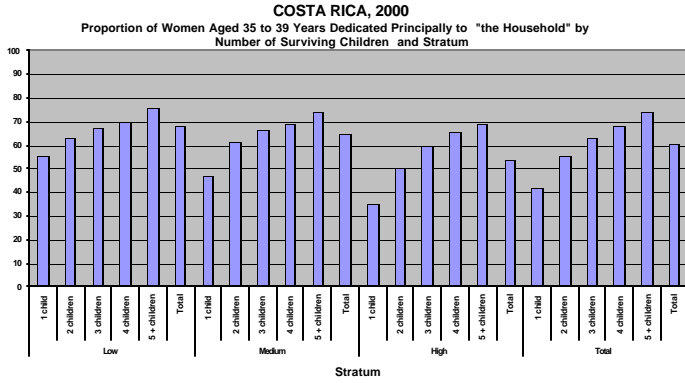


Figure 9
Mean Schooling for Women Aged 17 Years by Socio-Economic Stratum, Countries Selected Dates

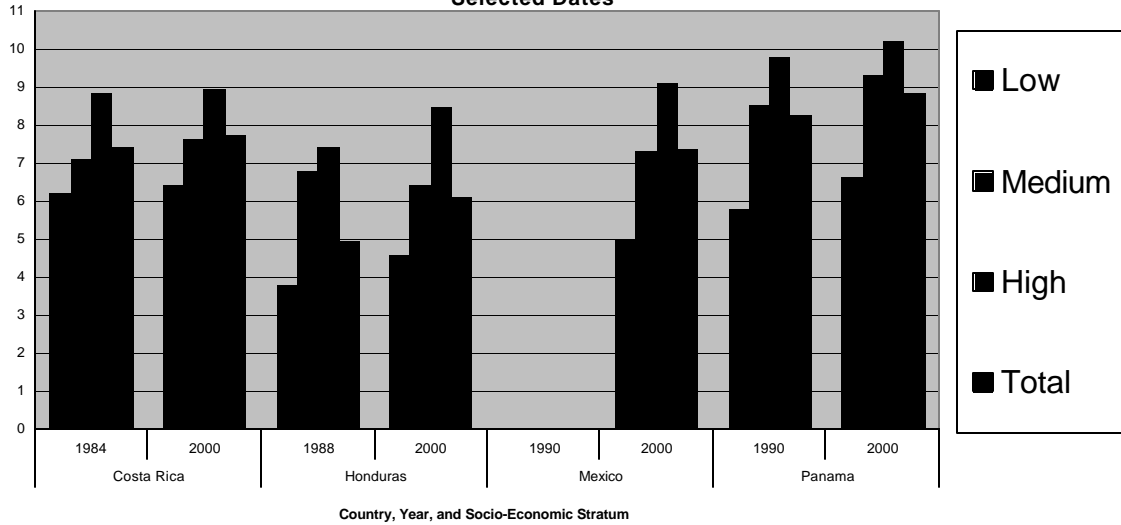


Diagrama 1
VULNERABILIDAD SOCIODEMOGRÁFICA: ESQUEMA ANALÍTICO BÁSICO Y OPCIONES DE POLÍTICA

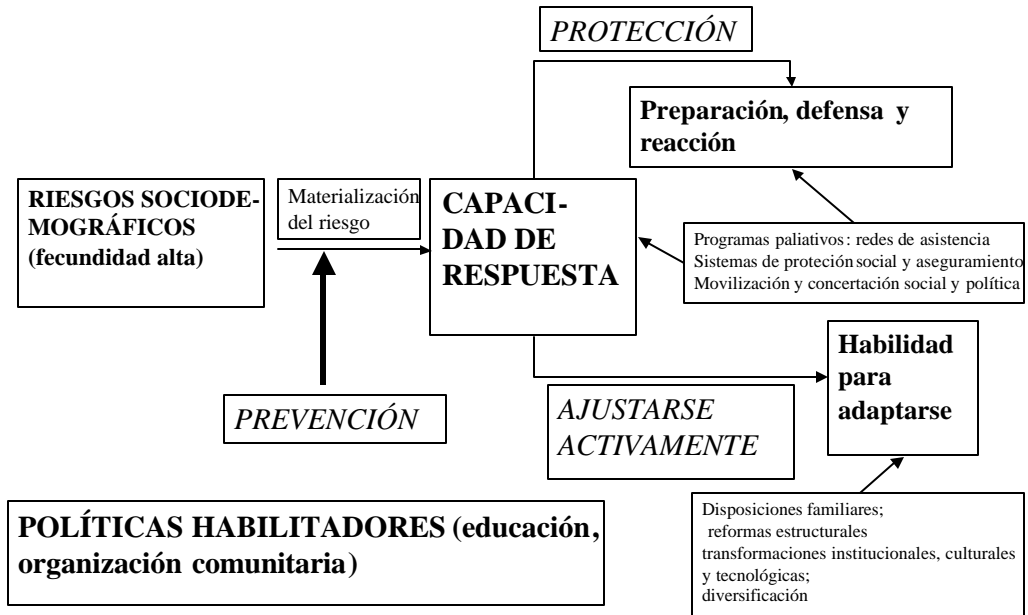


Diagram 1

Socio-Demographic Vulnerability: Basic Analytical Scheme and Policy Options

