

# Family Transitions in Latin America: First Intercourse, First Union and First Birth

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## ABSTRACT

This paper examines the initiation of sexual activity, first marriage and first birth as key steps in family formation. These events mark the transition to adulthood and generally occur in the late teens and early twenties in most Latin American countries. Using data from Demographic and Health Surveys, we examine the timing of these events across birth cohorts, comparing urban and rural areas, countries, cultural regions and educational groups. The average life course for young women in Latin America consists of the initiation of intercourse as adolescents, entering partnerships about one year later, and giving birth about a year after that. This pattern remained fairly stable over the time period examined. Education substantially delays these family transitions and the education effect is similar in most countries. Latin American women with secondary levels of schooling are significantly less likely to experience early marriage or parenthood relative to those with no schooling. Urban residence also delays entry into sexual activity, marriage and parenthood at the bivariate level. However, once education is controlled for, the effect of residence reverses – that is, urban residence is associated with early transition ages. A combination of national boundaries and cultural groupings explain more of the

variation in transition rates than either grouping alone. Thus, we conclude that both national and cultural factors appear to influence family transitions in Latin America, in addition to the effects of education and urbanisation. Copyright © 2002 John Wiley & Sons, Ltd.

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## INTRODUCTION

The initiation of sexual activity, first marriage and childbearing are generally viewed as the key steps in family formation. For many, these behaviours also mark the transition from adolescence to adulthood, especially for women. In several Latin American countries these transitions occur at young ages. For example, women aged 15 to 19 accounted for 16% of the annual births in Latin America in 1992 (Population Reference Bureau, 1992). In many rural areas it is traditional to marry young and begin childbearing early. Traditional norms regarding family life, however, have been weakening over time due to increased modernisation and urbanisation in Latin America (Population Reference Bureau, 1992).

Various individual and societal level factors influence the timing and sequencing of family transitions in Latin America. In particular, women's increased education is associated

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with delayed entry into marriage and parenthood, as is urban residence. In addition, family planning programmes and economic development at the national level influence women's access to education and contraception, and ultimately their patterns of family formation. Besides national boundaries, cultural factors shape the context within which women experience transitions to sexual activity, marriage and parenthood. Thus, multiple forces, both at the individual and macro-level, shape family formation in Latin America. We explore the timing and sequencing of transitions of women to first intercourse, marriage and birth using data from the National Demographic and Health Surveys selected from various Latin American countries. In particular, we consider the influence of education and birth cohort on these transitions within the geographical contexts of urban/rural domicile, nation states and cultural regions.

## BACKGROUND

First intercourse, first marriage and first birth are important transitions in the formation of families in Latin America. From a life course perspective, the sequencing and timing of these family transitions is important (Rindfuss *et al.*, 1988). Sets of interlocking roles and transitions place an individual on a life course trajectory that is then modified by further events and transitions over the life course (Elder, 1985; Rindfuss *et al.*, 1988).

Elder (1978) argued that demographic forces, such as age and sex, shape life course experiences, as do material factors, such as economic status. In addition, normative patterns or cultural expectations about the appropriate timing of life events and transitions constrain and shape the life course of individuals. Within the life course framework, age expectations mark appropriate times for major life events and transitions such as initiating sexual activity, getting married, and having children. Life events that occur out of sequence, as well as other departures from the normative life course, can have negative consequences (Hogan, 1981; Elder, 1985). For example, in Latin America unintended pregnancies and adolescent childbearing not only place the young woman at risk, but also her

child (Population Reference Bureau, 1992).

In addition to individual and normative influences on family transitions, past studies suggest that structural forces such as political events, economic decline, labour-market conditions and infrastructure development influence family transitions in less developed countries (Degraff *et al.*, 1997; Lindstrom and Berhanu, 1999). In addition, studies from the US highlight the influence of ethnic groups and Latino culture on transitions to union formation and childbearing (Zill and Nord, 1994; Manning and Landale, 1996). Studies of fertility transitions often focus on socio-economic explanations and their influence on decline, or on the influence of diffusion along cultural lines on fertility declines. Mason (1997), in a review of studies explaining fertility transitions, concluded that it is erroneous to assume that there are only one or two causes for family transitions. Empirical support for the influence of both economic and cultural factors on family formation is mounting.

Governmental and private family planning programmes, in combination with demographic and economic changes, gave impetus to the fertility transition in Latin America, beginning particularly in the 1960s (Mundigo, 1996). In a study of nuptiality trends in Latin America, Rosero-Bixby (1996) found a generally constant pattern of age at marriage over time, and concluded that this transition was influenced more by cultural factors than by socio-economic changes such as urbanisation and modernisation. Previous research suggests that individual transitions take place within a larger national and cultural context which exerts an influence on individual patterns of family formation (Bravo, 1996). Both national boundaries representing political and economic forces, as well as linguistic and ethnic boundaries representing cultural boundaries, are therefore likely to influence family life-course transitions.

Although first intercourse, marriage and birth necessitate the assumption of adult responsibilities, these transitions often occur during adolescence in less developed countries (Singh and Samara, 1996). Early or premature transitions can have negative health consequences for young women and require

them to be economically dependent on men, leaving them to fulfil domestic and subordinate roles in the family (Chowdhury and Trovato, 1994; Heaton, 1996). Early union formation often requires young women to forgo their education and the development of employable skills. The initiation of sexual activity increases exposure to sexually transmitted diseases and non-marital childbearing at very young ages and, places not only the new mother's health at risk, but also her child's (Population Reference Bureau, 1992).

Data from Latin America are consistent with trends in other developing regions, with almost universal and early age at marriage; however, Latin American timing of family formation is generally later than in African and Asian developing countries, but earlier than Western European nations (Merrick, 1986; De Vos, 1987). According to 1988 figures, the mean age at marriage in Latin America as a whole was about 22 years, and by age 50 approximately 13% of women in Latin America had still never married. In contrast, trends in South Asia showed an average age at marriage of 19 years, and only 2% of women aged 50 and over had never married (United Nations, 1988). A unique feature of Latin American patterns of family formation is the high proportion of consensual or informal unions (Rosero-Bixby, 1996).

Life course and fertility transition models suggest that various demographic, economic and social forces, both at the individual level and the national level, are expected to influence family transitions in Latin America. As socio-economic development has spread in the region, access to education and meaningful employment has increased. In addition, over time the population has become more urban and opportunities for women have broadened. Development, however, has not been even and many areas in Latin America remain impoverished and isolated. In some predominately rural areas of Latin America and among particular subgroups of the population, the norm remains for women to marry and start childbearing at young ages (Population Reference Bureau, 1992).

Past research has found a strong relationship between education and the transition to marriage and childbearing in Latin America

(Castro Martin and Juarez, 1995; Castro Martin, 1995; Singh and Samara, 1996). Education influences the reproductive behaviour of young women through various avenues: (1) as a source of knowledge; (2) as a vehicle for socio-economic development; and (3) as a transformer of attitudes (Castro Martin and Juarez, 1995). Chowdhury and Trovato (1994) noted that education and employment provide alternatives to marriage or family formation in non-industrialised societies, and that when these alternatives are more attractive than marriage, women will probably delay the transition to marriage and parenthood. Recent studies of the fertility transition in Latin America confirm the inverse relationship between fertility and education (Chackiel and Schkolnik, 1996).

Independent of education, urban or rural residence also influences family transitions. However, research indicates that the effect of education is greater than that of residence (Chackiel and Schkolnik, 1996). Urbanisation provides greater exposure to the mass media and values that encourage the postponement of marriage or offer alternatives to family life. Urban women, in contrast to rural women, are generally less connected to kinship networks or forms of familial social control that monitor their sexual behaviour (Singh and Samara, 1996).

Thus, transitions to first intercourse, first sexual union and first birth are expected to vary across national and cultural boundaries, over time, and within countries by urban/rural residence and education level. To examine these differentials and trends over time, we estimate the median age at first intercourse, first sexual union and first birth for birth cohorts from the 1940s to the 1970s in 13 Latin American and Caribbean countries. In addition, we estimate differences by education level and urban/rural residence. Next, we estimate the percentage of teenagers experiencing premarital sex and a premarital birth by cohort, education and urban/rural residence. Finally, we also identify national and cultural regions that shape these family formation processes.

## DATA AND METHODS

Data for this study come from each of the Demographic and Health Surveys (DHSs)

conducted in Latin America. DHSs include interviews with a probabilistic sample of women of childbearing age. Topics include basic demographic characteristics, fertility, contraception, immunisation and other health-related topics. Of particular importance for this study, women were asked dates or ages of first birth, first union formation and first sexual intercourse. Our analyses are based on individual data for all years surveyed in 13 Latin American countries participating in the DHS.

Caution should be taken in generalising this sample to all of Latin America. Not all countries are included. Most notably absent are the more developed countries in the southern cone (Argentina, Chile and Uruguay). More remote and sparsely populated areas are also excluded from some countries. The time coverage is also variable. A DHS was completed in all but two of the countries (Haiti and Nicaragua) between 1986 and 1990. One or two additional surveys were done in six countries (Bolivia in 1994, Brazil in 1991 and 1996, Colombia in 1990 and 1995, the Dominican Republic in 1991 and 1996, Guatemala in 1995, and Peru in 1992 and 1996) in the 1990s. Because we use retrospective reports of events, we are able to extend the time period of investigation to women born between 1940 and 1979. Despite the deficiencies, DHS data are generally accepted as the best source for comparative demographic statistics because of the high level of quality control and the compatibility of methodology across countries (more detail regarding these data can be found at [www.measuredhs.com](http://www.measuredhs.com)).

We first examine general patterns of family formation events. Survival tables and survival models are used to examine the influences of cohort, country, education and residence on each of these life course transitions. Cohorts are divided into four birth decades starting with the 1940s and ending with the 1970s. Education is grouped into four categories for comparison: no schooling, 1 to 5 years (*basico*), 6 to 8 years (*intermedio*), and 9 or more years (*secundaria*). Each country in the DHS defines urban residence separately, but generally 'urban' is considered a community of 2500 or more inhabitants.

In our second series of analyses, we give

more explicit attention to the degree of cross-national difference. We do this in the context of multivariate models that predict each of the three timing variables and the two sequencing variables as dependent variables. The independent variables are birth cohort, years of schooling completed (in single years), and urban/rural residence. We calculate the effect of each of these variables for the total sample, the average effect across countries, and the variation in effect across countries. Although the latter task could be calculated with random effects models, the small non-random sampling of countries and the difficulty of calculating random effects hazards models have led us simply to calculate means and standard deviations for parameters. In order to focus on the teenage years, all events are truncated at age 20.

The final issue we consider is the relative importance of cultural and national boundaries. National boundaries are defined by political processes, whereas cultural boundaries cross national borders and are based more upon ethnic and linguistic attributes. Latin America is a distinct region in terms of its racial and ethnic mosaic. There are indigenous populations in many countries, while in others there are very few such groups due to war, disease and dispersal. In addition, European and African populations have come into Latin America over the centuries, either willingly or by force. Miscegenation is very common in many countries, inasmuch as numerous racial groups exist within and across national boundaries. Prior research has not given adequate attention to regional differences in family demographics.

To identify cultural regions we attempted to match ethnic and linguistic regions with groupings of various sized administrative units provided in the DHS. The inherent problem with administrative boundaries, especially those on a larger scale, is that they usually do not follow cultural boundaries. This problem is compounded by the fact that bordering countries often have vastly different sized within-state areas reported in the DHS. Therefore, there is the possibility that cultural regions that cross national boundaries may be less accurate on one side of the border than the other.

Notwithstanding the difficulties of defining cultural regions, it is still useful to explore the

Table 1. Median age at first intercourse.

First intercourse	Cohort				Education (years)				Area	
	1940s	1950s	1960s	1970s	None	1-5	6-8	9+	Urban	Rural
Bolivia	18.7	18.6	18.6	19.6	18.0	17.8	18.6	20.8	19.3	18.2
Brazil	20.2	19.8	19.4	18.7	17.5	18.5	19.3	21.8	19.5	19.1
Colombia	19.2	19.6	19.9	19.4	16.7	18.3	21.0	24.2	20.0	18.5
D.R.	17.4	17.9	18.9	19.0	15.7	16.8	18.1	22.0	19.2	17.5
Ecuador	19.1	18.9	19.9	-	17.2	17.7	18.8	22.2	20.1	18.6
El Salvador	18.3	18.3	19.4	-	17.0	17.8	19.0	22.3	19.1	17.8
Guatemala	17.9	17.8	17.8	18.6	16.9	17.8	19.6	22.3	19.3	17.6
Haiti	19.1	19.1	18.7	19.0	18.3	18.8	19.7	20.7	19.2	18.8
Mexico	19.6	19.8	21.0	-	17.2	18.2	20.1	22.8	18.3	19.9
Nicaragua	18.0	17.7	17.7	17.9	16.1	16.8	17.9	21.0	18.5	17.2
Paraguay	19.2	19.1	18.8	19.2	17.9	17.9	19.1	21.6	19.6	18.5
Peru	18.6	18.6	18.8	19.7	16.8	17.4	18.2	21.4	19.8	17.6
Trinidad & Tobago	18.7	19.2	19.3	-	17.8	17.9	18.6	20.2	19.0	19.2

relationship of culture to family transitions by identifying cultural regions, even if imperfectly. There are a number of identifiable regions in Latin America that are largely tied to ethnic or racial patterns in the population. Because distance and topographic barriers lessen interaction among people, cultural ties across these physical barriers are weak. Therefore, our cultural regions are comprised of administrative units that are for the most part geographically contiguous. Furthermore, borders in many areas tend to follow altitudinal levels (e.g. lowlands versus highlands) or other physical characteristics (e.g. coastal versus inland). In order to compare the importance of cultural regions and national boundaries, we explicitly tried to create cultural areas which crossed national boundaries.

Considering both the geographical limitations of the DHS and the recognition that there are diverse cultural groups in Latin America, we formed 23 regions out of the ten mainland countries from which we have data. Various sources were used in defining the cultural regions (West, 1957; Harris, 1964; Wilgus, 1967; Pick *et al.*, 1989; Wade, 1986, 1997; Blouet and Blouet, 1993; Domínguez, 1994; Caviedes and Knapp, 1995; Esteva-Fabregat, 1995; MacDonald, 1997; Incer, 1998; Pantoja, 1998; Weismantel and Eisenman, 1998; Rowntree *et al.*, 2000). Four of the countries do not include more than one cultural area and thus have the

same boundaries both nationally and culturally – the Dominican Republic, El Salvador, Haiti and Trinidad-Tobago. The national boundaries and the cultural regions are listed in Table 8.

We compare chi-square and Bayesian Information Criteria (BIC) values for models that include country and cultural region separately, and then a third model that includes both. Models with smaller BIC values provide a better fit. The three covariates of education, year born and residence are also included in these analyses. Because of collinearity between national and cultural boundaries, only the effects from the two separate models are presented and discussed in detail.

## RESULTS

### Timing of Events

Tables 1 to 3 show median ages at first intercourse, first union and first birth for the Latin American countries studied. In most countries a majority of women have first intercourse during their teen years, but union formation and parenthood are delayed a little longer. In general, the results indicate that education is positively correlated with age at transition, and that the average age at transition is somewhat higher in urban relative to rural areas in most countries.

Table 2. Median age at first union.

First marriage	Cohort				Education (years)				Area	
	1940s	1950s	1960s	1970s	None	1-5	6-8	9+	Urban	Rural
Bolivia	20.7	20.4	20.5	21.6	20.0	19.6	19.9	22.8	21.2	20.1
Brazil	21.2	21.1	21.0	21.5	18.9	19.8	21.0	24.2	21.4	20.2
Colombia	20.5	21.1	21.6	21.7	18.3	19.7	20.5	24.1	21.7	19.9
D.R.	17.8	18.5	19.4	19.6	16.2	17.1	18.4	22.5	19.8	17.9
Ecuador	20.2	20.1	20.6	-	18.6	18.8	19.5	23.0	20.9	19.9
El Salvador	19.3	19.1	19.3	-	17.8	18.3	19.4	22.6	19.8	18.4
Guatemala	18.9	18.6	18.5	19.0	17.6	18.4	20.1	23.0	20.1	18.2
Haiti	21.0	21.0	20.6	20.9	19.8	20.5	21.9	24.8	21.6	20.4
Mexico	20.0	20.3	21.4	-	17.5	18.4	20.5	23.5	18.5	20.2
Nicaragua	-	18.2	18.1	18.1	16.6	17.0	18.1	21.4	18.8	17.5
Paraguay	20.7	20.9	20.7	-	19.5	19.1	20.8	23.8	21.9	19.9
Peru	20.3	20.5	20.9	21.5	18.6	18.8	19.6	23.7	21.8	19.2
Trinidad & Tobago	19.6	19.8	19.7	-	17.9	18.3	19.1	20.7	19.7	19.7

Table 1 reports life table estimates of the median age at first intercourse and shows substantial variation. Nicaragua and Guatemala have the earliest onset with values under age 18. Bolivia, Peru, Paraguay, Haiti and the Dominican Republic have comparatively young ages in the eighteenth year. Several other countries have average onset during the nineteenth year. Mexico reports the latest onset, reaching age 21 for the 1960s cohort. Most of these countries show no clear patterns of change across cohorts – the medians do not vary by more than one year over the 40-year period considered. The age at first intercourse

is increasing in the Dominican Republic, El Salvador, Mexico and Peru. Only Brazil has a noticeable decline in age at first intercourse.

Age at first intercourse increases substantially with higher educational attainment. In most countries the difference in age at onset between those with no schooling and those with at least nine years of schooling is around five years. The education differential is not as marked in Bolivia, Haiti and Trinidad-Tobago, but even in these countries the differences are substantial. Age at first intercourse is usually about one year younger in rural areas than in urban areas, but the urban-rural difference is

Table 3. Median age of first birth.

First birth	Cohort				Education (years)				Area	
	1940s	1950s	1960s	1970s	None	1-5	6-8	9+	Urban	Rural
Bolivia	21.6	21.1	20.9	21.3	20.6	20.1	20.3	23.2	21.6	20.5
Brazil	22.5	22.4	22.0	22.1	20.0	20.9	21.9	26.0	22.5	21.3
Colombia	21.5	21.9	22.4	21.9	19.3	20.4	21.3	25.4	22.4	20.6
D.R.	19.7	20.2	21.1	20.9	18.1	18.8	19.9	24.1	21.4	19.5
Ecuador	21.4	21.0	21.6	-	19.7	19.7	20.6	24.0	21.9	20.5
Guatemala	20.2	19.8	19.7	20.0	19.0	19.5	21.0	23.8	20.9	19.4
Haiti	22.4	22.2	22.0	22.6	20.9	21.6	23.4	27.7	23.3	21.4
Mexico	21.2	21.3	22.2	-	19.0	19.6	21.5	24.6	19.7	21.0
Nicaragua	-	19.5	19.6	19.7	18.0	18.5	19.4	22.9	20.3	18.9
Paraguay	21.4	21.6	21.3	-	19.9	19.8	21.5	24.8	22.6	20.4
Peru	21.1	21.1	21.3	21.7	19.5	19.6	20.0	24.2	22.2	19.8
Trinidad & Tobago	21.1	21.9	22.6	-	19.4	19.9	20.9	23.8	22.3	21.6

reversed in Mexico and Trinidad-Tobago. Overall, results indicate that the onset of sexual activity begins in late adolescence and that this pattern has not changed much over the last few decades. Onset is delayed among those with higher educational attainment, and in most cases in urban areas.

On average, marriage or formation of a consensual union begins about one year later than initiation of sexual intercourse (see Table 2). The ranking of timing of first intercourse and first union is high ( $r = 0.71$  for the 1960s cohort). Guatemala and Nicaragua report the youngest ages at union formation, while Mexico and Colombia report the oldest. However, the variation across countries in timing of union formation is somewhat greater (standard deviation is 1.09 for the 1960s cohort) than is the variation in onset of first sex (standard deviation of 0.88 for the 1960s cohort). The trend is nearly flat in most countries, but age at first union is increasing in Colombia, Mexico, Peru and the Dominican Republic. None of the countries, however, show a clear decline in age at first union. As with first intercourse, the education difference is substantial—around five years when comparing those with no education to those with at least nine years. Likewise, the urban-rural differential generally ranges between one and two years.

The median age at first birth averages about one year greater than age at first union (see Table 3). The ranking of countries is similar to that for first sex (inter-country correlation = 0.79) and first union formation (inter-country correlation = 0.78). Again, Nicaragua and Guatemala are the earliest initiators, while Mexico, Colombia and Trinidad-Tobago are late starters. Trends are flat for most countries, but some increase in age at first birth is evident in the Dominican Republic, Mexico and Trinidad-Tobago. As with the other two events, educational differences between those with no schooling and those with nine or more years are generally in the range of four to six years. Moreover, rural residents tend to start having children at a younger age than urban residents.

Collectively, these results confirm the importance of late adolescence. Initiation of sexual intimacy and union formation are, on average, adolescent experiences in many Latin

American countries. Initiation of parenthood is not delayed much after marriage. This is especially true for adolescents with lower levels of educational attainment and who live in rural areas. Moreover, there is little indication that the timing of these key events has changed much in these Latin American countries.

### Relative Timing

Tables 4 and 5 indicate the relative timing of these events. Popular images of Latin American women suggest that they remain virgins until a union is formed and that childbirth should occur within marital unions. Our results indicate substantial deviation from this pattern in several countries (see Table 4). For cohorts born in the 1960s, the proportion reporting premarital sex during their teenage years exceeded 40% in Bolivia, Haiti and Peru. In the same period, only four countries had proportions below 20%. Thus, premarital sex is not uncommon in many contexts. Given that we are relying on age of events reported in years, this suggests that premarital sex occurred at least one month before union formation (e.g. if they had sex in the last month before a birthday and formed a union in the first month after a birthday).

Most countries show a relatively flat trend in premarital sex, sometimes with a drop in the most recent cohort. More prolonged declines are noted in Guatemala and Trinidad-Tobago. Only Brazil and Colombia show a steady increase in the proportion experiencing premarital sex. The likelihood of premarital sex is substantially lower among those who have completed more schooling. The average difference between those with at least nine years of schooling and those with no schooling is around 20%. The difference is even greater in some countries. There is no clear pattern of rural-urban difference in premarital sex. The percentage is higher in urban areas of five countries, but higher in rural areas of eight countries. In no case is the urban-rural difference as great as the educational difference.

Premarital teen births are relatively uncommon in Latin America. Percentages reporting a premarital birth while still a teenager are less

Table 4. Percentage of teenagers reporting premarital sex.

% of teenagers premarital sex	Cohort				Education (years)				Area	
	1940s	1950s	1960s	1970s	None	1-5	6-8	9+	Urban	Rural
Bolivia	41.6	42.0	42.4	35.2	50.8	50.1	42.3	36.8	35.8	47.7
Brazil	20.3	27.2	33.0	43.7	36.2	35.0	36.3	24.8	33.2	27.7
Colombia	26.9	26.4	28.2	34.9	50.5	35.4	30.2	19.9	27.4	24.3
D.R.	20.5	21.0	16.0	16.9	33.3	26.6	19.5	10.4	16.2	11.3
Ecuador	23.8	26.7	20.9	-	46.7	37.0	24.0	12.2	19.4	29.6
El Salvador	30.2	31.5	19.7	-	33.5	32.0	27.6	14.8	25.6	28.0
Guatemala	32.7	32.5	28.4	19.9	35.1	28.2	19.3	13.2	23.2	28.6
Haiti	41.3	40.3	46.3	42.7	51.0	43.5	37.1	32.3	41.3	45.5
Mexico	16.6	16.8	13.4	-	16.2	21.8	15.0	9.5	18.6	16.0
Nicaragua	22.2	26.7	22.6	17.6	31.6	25.9	21.1	12.1	19.1	22.9
Paraguay	26.1	30.5	36.4	30.8	41.1	38.5	34.3	22.7	32.1	33.2
Peru	38.7	41.2	40.7	33.5	56.3	50.1	48.2	26.4	33.7	49.7
Trinidad & Tobago	30.1	23.6	16.3	-	38.4	30.5	27.9	15.9	24.0	20.1

than 10% in every country except Bolivia and Paraguay (Table 5). Brazil is the only country that shows a steady increase in premarital births to teens. As with each of the prior tables, premarital births in each country are higher among the least educated. Teenagers are more likely to have premarital births if they live in rural areas in 9 of the 12 countries, but the differences are not always large.

In short, initiation of sexual experience, union formation, and to a lesser degree child-birth, are fairly common experiences for adolescent females in Latin America. It is not uncommon for sex to precede union formation

in some countries, but premarital childbearing is uncommon. Extension of schooling reduces the likelihood that any of these events will occur during the teenage years. Urban-rural differences are less clear, especially in terms of the sequencing of events.

### Cross-National Variation

Table 6 reports summary results of our multivariate hazards analysis. Results for education are quite consistent across outcomes. Each year of education reduces the risk of any of the events in question by approximately 12%. The

Table 5. Percentage of teenagers reporting premarital birth.

% of teenagers premarital birth	Cohort				Education (years)				Area	
	1940s	1950s	1960s	1970s	None	1-5	6-8	9+	Urban	Rural
Bolivia	10.6	10.4	11.1	11.2	15.1	14.9	11.6	5.2	7.6	14.7
Brazil	2.5	4.7	5.9	7.5	10.4	7.3	5.3	2.0	5.4	5.6
Colombia	5.7	5.9	5.8	7.5	13.3	9.5	1.3	2.0	5.3	9.1
D.R.	3.0	2.6	2.0	2.3	6.5	3.6	2.3	0.7	2.1	2.7
Ecuador	7.1	6.6	4.0	-	14.0	9.2	5.3	2.0	3.8	8.2
Guatemala	5.0	5.3	5.3	4.0	5.8	5.6	3.6	2.0	4.7	4.8
Haiti	3.8	3.3	3.3	2.5	3.8	3.3	0.5	0.7	3.1	3.0
Mexico	3.9	3.3	3.2	-	8.8	6.0	2.6	1.3	5.0	4.2
Nicaragua	3.6	7.3	4.7	2.7	3.3	5.3	4.7	1.1	3.6	5.0
Paraguay	8.8	10.3	9.1	10.7	19.9	14.7	8.9	2.7	7.6	11.8
Peru	8.4	8.8	8.5	6.9	13.6	12.1	11.5	4.1	6.7	11.5
Trinidad & Tobago	4.9	3.6	1.9	-	4.8	5.2	4.2	1.3	3.5	2.3



Table 6. Intercountry average and variation in effects on timing of events: Cox regression.

	First sex	First marriage	First birth	Premarital sex	Premarital birth
<b>Education</b>					
Total	-0.120	-0.126	-0.134	-0.097	-0.126
Mean	-0.124	-0.130	-0.147	-0.104	-0.161
s.d.	0.020	0.019	0.023	0.021	0.039
<b>Rural</b>					
Total	-0.067	-0.008	-0.010	-0.162	-0.145
Mean	-0.063	-0.043	-0.041	-0.100	-0.162
s.d.	0.089	0.084	0.081	0.147	0.269
<b>Year born</b>					
Total	0.003	0.003	0.010	0.003	0.006
Mean	0.004	0.005	0.009	0.001	-0.001
s.d.	0.007	0.004	0.006	0.016	0.023

implication is that those with 12 years of schooling would have rates about a quarter of the rates for those with no education. The association between education and first birth is somewhat greater than for first intercourse or first union formation. Moreover, education coefficients are a little smaller if sex and first birth are restricted to premarital events. Still, results for education are quite stable. Moreover, the standard deviations across countries are relatively small, indicating that education has approximately the same influence in most of the countries considered. Perhaps the strongest conclusion from these results is that educational attainment is associated with later transitions into sexual activity, partnership and parenthood during the adolescent years.

Results for urban/rural residence are less clear. It is important to note that once education is included, the coefficient for residence is reversed. In the bivariate results reported above, transition rates for each of the events were generally higher in rural areas. This is largely because educational levels are lower in rural areas. Once education is taken into account, transition rates are higher in urban areas, especially for premarital sex and premarital births. The average value of these coefficients is quite small, except when transitions are restricted to premarital events. Moreover, the standard deviations are quite large, indicating that no single pattern typifies all countries. No doubt, some of this variation could be due to varying definitions of 'urban'. Still, the wide variation precludes precise

generalisation to the entire region. Transition rates tend to be higher in urban areas, but this is not observed in all countries.

Consistent with the flat trajectories reported above, coefficients for the year born are relatively small. For example, a coefficient of 0.004 implies that those born near the end of the period covered (about 1983) would have rates only 20% higher than those born near the beginning (about 1936). Moreover, the large standard deviations indicate enough variation that we cannot conclude that gradual delaying of family formation is evident throughout the region. It does deserve noting that the average coefficient for premarital births is negative.

### Countries Versus Cultural Regions

The final issue we examine is the relative importance of cultural and national boundaries. Table 7 compares chi-square values and BIC values for models that include country and cultural region separately, and then a third model that includes both. Basically, these chi-square and BIC values indicate that both national and cultural boundaries account for some of the variation in transitions. The model with both sets of variables fits better than either set by itself.

Two separate models examining the effects of country or cultural area are reported in Table 8. The numbers in the table represent the multiplicative effect of country or region on the rate after controlling for the effects of education, birth cohort and urban/rural resi-

Table 7. Model fits for country and cultural region.

	First sex	First marriage	First birth
<i>Model chi-square</i>			
Cultural region	24208.64	24596.41	20735.13
Country	23714.75	24248.03	20461.17
Both	24551.42	25272.83	21099.99
<i>Model BIC</i>			
Cultural region	2181104.86	1741848.92	1451680.58
Country	2181237.77	1741981.92	1451813.58
Both	2181020.29	1741764.29	1451595.95

Table 8. Coefficients for country and cultural region.

	First sex	First marriage	First birth
<i>Country</i>			
Bolivia	0.735	0.490	0.737
Brazil	0.657	0.462	0.590
Colombia	0.696	0.522	0.711
Dominican Republic	1.004	0.995	1.075
Ecuador	0.765	0.650	0.881
El Salvador	0.714	0.662	-
Guatemala	0.681	0.614	0.752
Haiti	0.530	0.344	0.412
Mexico	0.607	0.628	0.814
Nicaragua	0.942	0.984	1.118
Paraguay	0.750	0.535	0.768
Peru	0.847	0.589	0.852
Trinidad/Tobago (implicit)			
<i>Cultural region</i>			
Northern Mexico	0.650	0.685	0.852
Central Mexico	0.559	0.550	0.726
Mayan	0.674	0.619	0.731
Central America North	0.755	0.719	0.599
Haiti	0.528	0.345	0.403
Dominican Republic	1.003	0.996	1.063
Central America South	0.954	1.005	1.104
Caribbean Rimland	0.804	0.739	0.881
Colombian Core	0.664	0.474	0.661
Pacific Lowlands	0.743	0.543	0.768
Ecuadoran Core	0.788	0.733	0.951
Northern Quechua	0.839	0.617	0.891
Southern Quechua	0.789	0.537	0.777
Peruvian Core	0.917	0.640	0.898
Aymara	0.752	0.505	0.759
Western Amazonia	1.045	0.745	1.017
Brazilian Core	0.586	0.397	0.507
Northeast Brazil	0.609	0.441	0.566
Southern Brazil	0.671	0.504	0.534
Northwest Brazil	0.894	0.617	0.816
Guarani	0.642	0.430	0.632
Paraguayan Core	0.741	0.526	0.744
Trinidad / Tobago (implicit)			

dence. The top half of the table indicates the effects for country or national boundaries on the three family transitions – first sex, marriage and birth. The reference category is Trinidad-Tobago. In general, the country effects suggest three general transition patterns. Rates are highest for the Dominican Republic, Nicaragua and Trinidad-Tobago, suggesting that after controlling for education and residence these countries have the earliest ages of transition. In contrast, rates are lowest in Brazil and Haiti, indicating that these countries have the latest transition ages once education and residence are controlled for. The other countries generally show a mixed pattern in between the other two groups.

The bottom half of Table 8 presents the effects on transition rates by cultural region. Trinidad and Tobago remains the implicit category. In order to summarise the patterns, a factor analysis was performed with cultural regions as cases, and coefficients reported in Table 8 as variables. The principal components analysis identified one factor accounting for some 89% of the variation among the variables (all loadings were above 0.9). The factor weights are mapped in Fig. 1. Regions with the highest component weights are those with the earliest transition ages and darkest shades on the map, while those with the most negative weights have the latest transition ages.

These cultural region results reveal a more varied pattern of transition rates than that with the countries alone. Bolivia, Peru, Colombia and Nicaragua all stand out because they have regions that fall into three different patterns of transition timing. The cultural regions of these countries are characterised by discernible physical barriers or boundaries, which may also heighten cultural differences in family formation.

With education and residence controlled, Trinidad-Tobago, the Dominican Republic and Southwest Nicaragua show very early transition rates (high weighting values), but added to this group is Western Amazonia, which differs from other parts of Bolivia and Peru. These four regions are very dispersed and generally not culturally tied to each other. Low levels of development may also contribute to these early transition rates.

The map also reveals a more clustered

geographical pattern of moderately early transition rates in South America from Northwest Brazil to the Pacific coast. Of particular interest is the significant difference between Northwest Brazil and the rest of the country, where the most populated states have the latest transition rates (most negative factor weightings). The Caribbean Rimland also shows relatively early transition rates, and it shares cultural characteristics with Southwest Nicaragua and the Caribbean regions. Central America and Mexico from northern Nicaragua northward exhibit a surprising level of similarity in their moderately late transition rates. This is also true for the Southern Quechua and Aymara regions.

In addition to the eastern cultural regions in Brazil, four other regions show later transition rates, namely Central Mexico, Colombian Core, Haiti and Guarani. Both Central Mexico and the Colombian Core contain the most populous portions of their respective countries which are generally more developed, and thus present greater cultural pressures for later family transition experiences than peripheral regions of the country. Haiti and Guarani are surprising in that they both are less developed regions which show low transition rates. The possibility of important cultural attributes of the people in these areas warrants further exploration.

## DISCUSSION

Clearly, the US experience of rising rates of premarital sex, created by some decline in age at first intercourse combined with a substantial increase in age at first union formation (Lichter, 1995), is not evident in most of the Latin American countries considered here. The general life-course pattern in Latin America consists of young women having first intercourse as adolescents, entering partnerships about one year later, and giving birth about a year after that. This pattern remained fairly stable across cohorts born between 1940 and 1979. As is the case in most countries, we found premarital sex to be much more common in Latin America than premarital child-bearing. In addition, we found greater variation across countries in age at union formation than in age of sexual activity, but

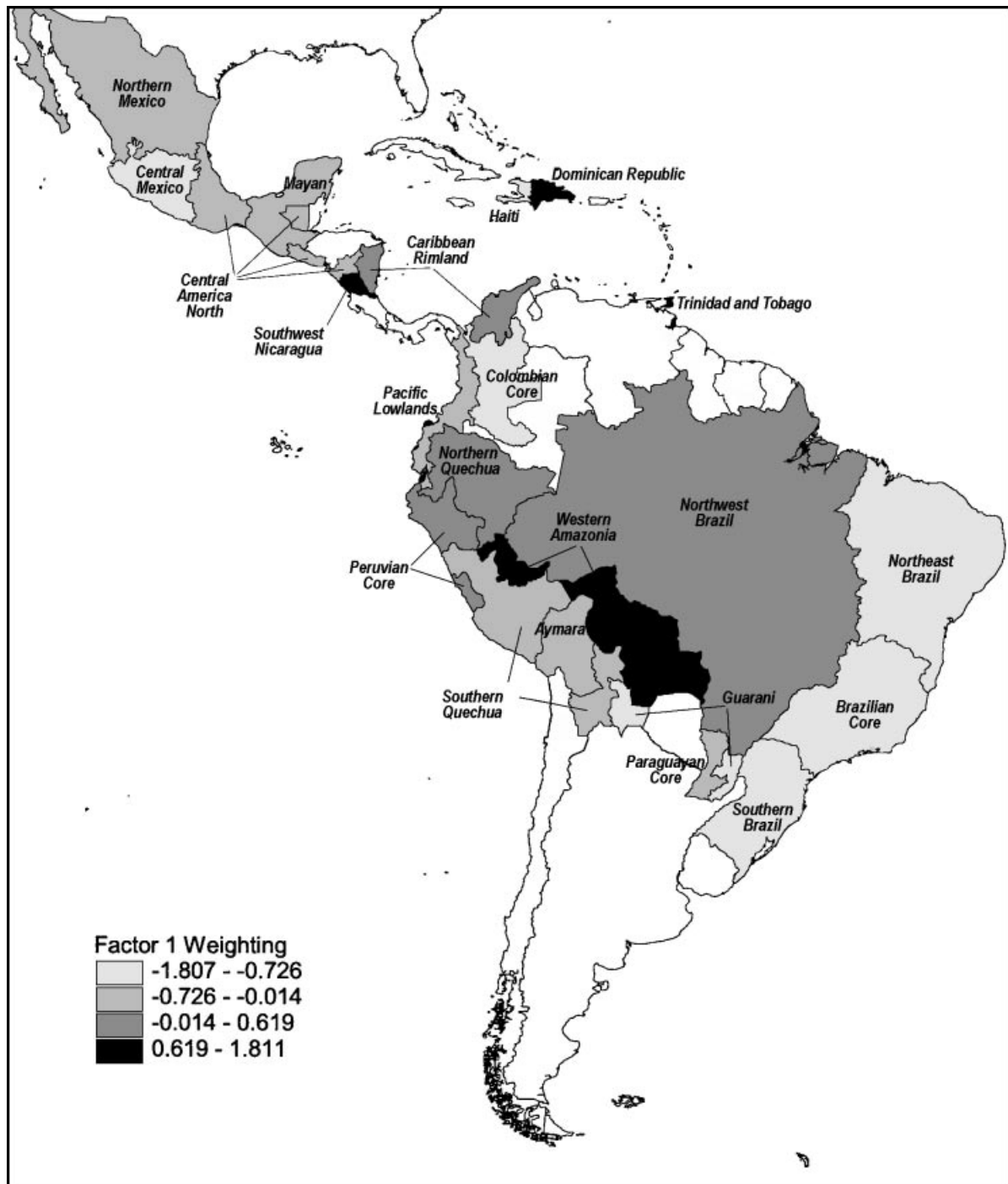


Figure 1. Family transition rates of selected Latin American countries. *Note:* Factor 1 Weighting is derived from a model of first sex, first marriage and first birth rates which control for the effects of education, birth cohort and urban/rural residence.

in general we conclude that these transitions occur in late adolescence and early adulthood.

As noted by the life course perspective, the

sequencing, timing and ordering of family transitions is important (Rindfuss *et al.*, 1988). In particular, these transitions place an indi-

vidual on a particular life course trajectory (Elder, 1985; Rindfuss *et al.*, 1988). Early ages of transition to sexual activity, marriage and birth have numerous implications not only for the future of young women in Latin America, but also for their children. The initiation of sexual activity at young ages increases exposure to sexually transmitted diseases such as AIDS (Population Reference Bureau, 1992). Early entry into marital or consensual unions is associated with higher rates of union dissolution, especially informal unions. In addition, childbearing at young ages increases the risk of maternal mortality, as well as the risk of illness and infant mortality (Population Reference Bureau, 1992; Brown and Eisenberg, 1995). Early transitions to marriage and birth especially inhibit a young woman's ability to continue her education and limit her future employment opportunities (Population Reference Bureau, 1992). Reduced educational opportunities can keep poor Latin American women in a cycle of poverty. Studies suggest that teenage mothers are seven times more likely to be poor compared with older mothers (Harper, 1989).

Our study of 13 Latin American countries demonstrates a strong relationship between increasing levels of female education and older ages of transition to sexual activity, union formation and childbearing. Consistent with prior research (Castro Martin and Juarez, 1995; Castro Martin, 1995; Chackiel and Schkolnik, 1996; Singh and Samara, 1996), we found that education substantially delays these family transitions and that the effect is similar in most countries. Thus, policies that encourage young women to pursue secondary schooling provide incentives to delay family transitions beyond the adolescent and early adult years.

Urban residence also delays entry into sexual activity, marriage and parenthood at the bivariate level. However, once education is controlled for, the effect of residence reverses – that is, urban residence is associated with early transition ages. In general the initial pattern of early age of transition in rural areas is a result of lower educational levels in rural areas. The effect of residence is somewhat mixed, and never as strong or consistent as the effect of education (Chackiel and Schkolnik, 1996).

It remains somewhat of a puzzle that the

trends as measured by birth cohort are relatively flat in the face of modernising forces such as educational expansion and urbanisation. Given the small and inconsistent influences of urban residence we find here, urbanisation should not be expected to be associated with dramatic changes in the timing of family transitions. Indeed, the correlation between birth date and urban residence is only 0.05 in our data. On the other hand, education has a big effect on timing of family formation, and we would expect this effect at the individual level to translate into broader social change. The correlation between education level and birth date is 0.20 for our total sample. The lack of a trend is consistent with recent discussion calling into question the developmental paradigm as an explanation for demographic transitions (Thornton, 2001). Clearly the connection between correlations at the individual level and long-term social change deserves further attention.

Finally, in addition to the influence of macro forces on the individual life course, past studies of fertility and family transitions argue that both national levels of development and/or cultural boundaries influence the family transitions of individuals (Elder, 1978; Bravo, 1996; Rosero-Bixby, 1996; Degraff *et al.*, 1997; Lindstrom and Berhanu, 1999). We examined the effect of both national boundaries and cultural boundaries based upon ethnic and administrative divisions on rates of transition to sex, marriage and childbearing. Estimates indicate that both explain more of the variation in transition rates than either grouping alone. Thus, we conclude that both political and cultural factors influence family transitions in Latin America, in addition to the effects of education and urbanisation.

Our analyses of country and region suggest two extreme patterns of transition rates in Latin America. In particular, we found that tropical regions including the Dominican Republic, Central America South (Nicaragua in particular), Western Amazonia (lowlands of Bolivia and Peru), Trinidad-Tobago, and to a lesser extent the Caribbean Rimland, experience significant rates of sexual activity, union formation and childbearing at young ages. In contrast, Haiti and regions of Brazil, Central Mexico, the Colombian Core and sections of

Paraguay have rates of entry into family formation at older ages. These regional and country patterns emerge after controlling for the effects of education and urbanisation. Camisa (1977), in an early study of marriage patterns in Latin America, concluded that countries in Central America (except for Costa Rica and Panama) experienced early ages of marriage and high proportions of consensual unions. In contrast, she found the oldest ages of marriage in the southern cone countries (not included in our analyses) and intermediate levels in Brazil. Additional studies have also found high rates of teen childbearing in Central America and to a lesser extent the Caribbean, in contrast to South American countries (Population Reference Bureau, 1992). These findings appear to concur with our results – with the exception of Haiti, for which we found rates similar to Brazil.

Culturally, Haiti and Brazil both have African-heritage populations and are non-Spanish speaking countries. In particular, Northeastern Brazil and the Core to some extent have large immigrant populations from Africa. However, why these characteristics would delay entry into sexual activity, marriage or childbearing is uncertain, given that informal unions are also typical of African-heritage people (Merrick, 1986). Brazil has a very strong family planning programme, with relatively high rates of contraceptive use, whereas contraceptive use in Haiti is very low (Population Reference Bureau, 2000). Contraceptive use, however, is associated with education levels, which we control for in our analyses. Certainly more research is needed to uncover the importance of cultural and national boundaries for family transitions in Latin America.

Given that the southern cone countries are not included in the Demographic and Health Surveys, our results cannot be generalised to all of Latin America. In addition, geographical limitations of DHS data result in rather crude measures of cultural boundaries. However, future DHSs are anticipated to include geographic locational information that can be analysed within a geographic information system (GIS). Our findings highlight the potential for analysing transitions using explicit geographical factors such as cultural and

national boundaries together with other social indicators. This line of analysis should yield more complete understanding of patterns of demographic change in Latin America and other world regions.

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