Work in progress
Do not cite

The geo-diversity of the Colombian Family: union formality and household complexity

Anny Carolina Saavedra, Albert Esteve, Antonio López Gay

1. Background

Similar to the vast majority of Latin American countries, Colombia experienced many social, economic and demographic transformations that gradually led to substantial changes in the size and dynamic of the family throughout the twentieth century. These changes in the second half of the century were associated with a set of internal processes related to the period of greatest modernization of the country: a stage of intense urbanization, massive rural migration to the urban areas, educational expansion and an increase in the female labor market participation. The unraveling of the demographic events revealed that Latin America, unlike Europe, experienced comparatively little delay in age at first marriage (Rosero Bisby et al 2009), and age at first childbearing (Rosero Bisby 1996, Castro 2002, Fussell and Palloni 2004, Esteve et al 2013), the most direct impact was on the unprecedented decline in fertility. The decline in fertility in turn led to a reduction in the size of households, families became smaller and smaller (Juárez y Llera 1996).

Moreover, the widespread access to contraception finally gives women a choice to determine the desired family size. In Latin America, this monumental breakthrough is deemed to be the main contributor to fertility decline. In Colombia, the early introduction of contraceptive methods in the sixties marked the turning point of fertility decline. In just less than ten years, the total fertility rate declined from 6.7 in 1969 to 3.8 in 1978, representing a drop of 43% (Flórez 2000). According to a previous study, the fertility decline accounts for the fall from between 20% to 40% of household size in Colombia between 1965 and 1975 (Juarez and Llera 1996). The reduction in household size, however, was not correlated with changes in family structure. One of the most prominent features of the Colombian family is its complexity, in which households are often composed by non-nuclear family members, and households are commonly headed by women who are single parents.

On the one hand, fertility has been decreasing since the 1960s; on the other hand, informal unions seemed to have bursted into an unstoppable growth in the same period. Among the group of women in union between the ages of 20 and 29 in Colombia, Fussell and Palloni estimated the proportion of consensual unions to be around 13.7% in the 60s. In the 80s, this proportion had increased to 22%, and eventually reached a level of 34.7% in 2000 (Fussell y Palloni 2004). These levels position Colombia in the group of Latin American countries with the highest growth of consensual union rate over the past 40 years. A number of scholars agree that historical roots of non-marital cohabitation in Latin America remain valid as an argument to explain the high number of consensual unions in the region. As a result, factors such as ethic composition are regularly used to analyze consensual unions in the region (Esteve et al. 2012).

All the aforementioned factors have contributed to making the Colombian family a mixture of many elements. The determinants of family form range from those related with the country's

historical evolution to those sociocultural characteristics closely linked to the territory. In this regard, this work aims to identify from a set of indicators family dimensions that characterized Colombian households and how these dimensions are scattered throughout the territory.

2. Data and methods

We used census microdata of 2005 for Colombia made available through IPUMS International (Minnesota Population Center). The analysis was conducted in two phases. In the first part were estimated for each unit of municipalities (532 municipal aggregates arranged in IPUMS) a set of indicators that captures different dimensions: the timing of the union, the timing and intensity of fertility and finally, the household structure. After obtaining these indicators, we use the results of the correlation matrix to formulate a principal component analysis as a method of simplifying data. This analysis has two advantages: the possibility to identify patterns in the data by recognizing their similarities and differences, and the inductive reduction of dimensions without significant data loss. Two factors were extracted with the varimax orthogonal rotation method. This method is performed under the assumption that the resulting factors are uncorrelated dimensions. The variance explained by factors 1 and 2 of the total variance of the indicators included in the analysis was 55.42%.

3. Results of principal component analysis

From the two factors extracted by principal component analysis, two dimensions can be inferred. Factor 1 reflects the formality and informality related to the timing of union formation and the type of union. Factor 2 determines whether the household composition is simple or complex in structure. To analyze these two dimensions we selected the most relevant indicators by setting a correlation coefficient higher than 0.5.

Table 1. Principal component analysis (factor loadings).

Indicators	Factor 1	Factor 2
% women 15-19 in union	-0,857	-0,041
% women 25-29 in consensual union	-0,763	0,426
% childless single women, aged 15-19	0,891	0,055
% childless single women, aged 45-49	0,724	0,060
% childless women, aged 15-19	0,865	0,087
% childless women, aged 45-49	0,424	0,155
% mothers in consensual union with children, aged 25-29	-0,758	0,312
% separated and divorced women	0,004	0,530
% heads of extended households	-0,126	0,743
% children aged 0-4 in nuclear households	0,065	-0,863
% heads of nuclear households	0,124	-0,610
% female heads of households	0,282	0,567
Average of mothers in the household	0,159	0,580

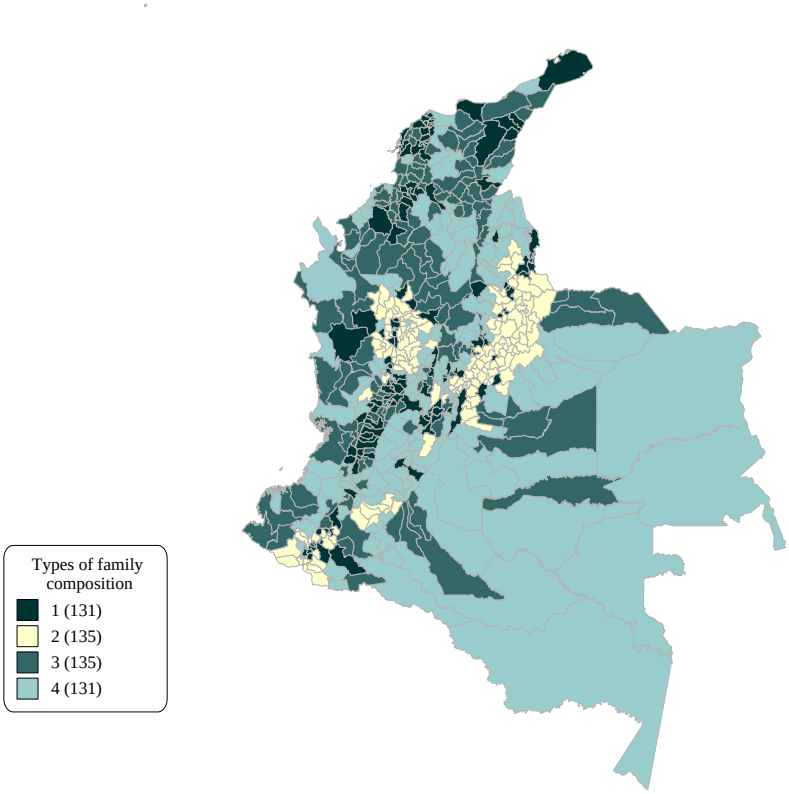
Factor 1 has positive factor loadings for the indicators that capture the intensity of celibacy, the delay of entry into marriage or union, and childlessness at early and late ages. Negative values for indicators measuring early and informal unions and the presence of children in consensual unions

are observed. Moreover, Factor 2 shows positive loadings on indicators that determine the household complexity: the proportion of extended households, the proportion of female-headed households and the average number of mothers in the household, Also, this factor is positively affected by an indicator that estimates the dissolution of unions, the proportion of separated and divorced women. Instead, Factor 2 is affected negatively by those indicators that measure the nuclearity of the households, the percentage of children in nuclear households and the percentage of heads in nuclear households.

The values of Factors 1 and 2 were disaggregated for each of the 532 municipalities units (adopted by IPUMS). Once we estimated the national average, municipalities were classified according to the value of the factor, above (capital letters) or below (lower cases) the median. Using F and f' for Factor 1, and E and e' for Factor 2, were identified a total of four groups. FE and f'e' each one of them with 131 municipal aggregates, and Fe' and f'E with 135 were obtained.

Map 3 shows the geographical distribution of these groups. Each of the categories represents four different types of family composition. Type 1 (FE), is found mostly among municipalities in northern and center Colombia, is characterized by formal unions and a large number of extended households. Type 2 (Fe ') has a well defined geographical boundaries, is located almost exclusively along the central region. This corresponds to a more traditional family model of formal unions and nuclear households. Type 3 (F'E), is located mostly in the northwestern municipalities. It is distinguished by its early and informal unions and a high proportion of extended households. Finally, type 4 (F'E ') is the more dispersed family configuration in the territory. Informal unions and nuclear households seems to be the less rigid family formation mode in geographical terms, the distribution of this type is observed throughout the length and breadth of national territory with some preference for southeast zone.

Map 3. Types of family composition by municipal aggregates.



In an attempt to clarify the territorial distribution of these types, we selected a set of contextual variables that may be correlated with its spatial location (Table 2). Type 1 is linked to urban areas, where it is hardly surprising that a high average of women with secondary or higher education and a high proportion of active women are captured. The presence of a considerable number of extended households is probably related to the fact that the cost of living in the city could be amortized with the formation of large households. The more traditional family composition, type 2, is known for its association with ethnic structure. This group is made up of a substantial number of whites. Type 3 corresponds to the more informal typology with regard to the formation of a union and more complex regarding the structure of households. This typology is also related to the ethnicity of the population but in this case with the group of afro-descendents. Although, type 4 is the most dispersed group in terms of its geography distribution, there is a predilection for rural areas. This feature is also consistent with the level of education and labor force participation among women aged 25-49.

Table 2. Contextual variables by type of family composition.

Type	% Secondary +University 25-49	% Active Women 25-49	%Indig	%Black	%White	%Urban	N
	Mean	Mean	Mean	Mean	Mean	Mean	
1	36,86	36,45	4,32	8,54	85,61	69,07	131
2	25,58	29,15	3,21	2,73	92,8	40,52	135
3	25,07	26,84	6,51	19,09	71,65	53,69	135
4	18,12	23,18	8,61	9,46	77,45	37,91	131

References

Castro Martín, Teresa (2002). Consensual Unions in Latin America: Persistence of a Dual Nuptiality System. *Journal of Comparative Family Studies*, vol. 33, n.º 1: 35-55.

Esteve, A., R. Lesthaeghe y A. López Gay (2012), "The Latin American Cohabitation Boom 1970-2007", *Population and Development Review*, vol. 38, núm. 1, pp. 55-81.

Esteve, Albert, Luis López-Ruiz, and Jeroen Spijker (2013). "Disentangling how educational expansion did not increase women's age at union formation in Latin America from 1970 to 2000". *Demographic Research* (28)3:63-76.

Flórez C.E. (2000). *Las transformaciones sociodemográficas en Colombia durante el siglo XX*. Banco de la República – Tercer Mundo Editores: Bogotá.

Fussell, Elizabeth and Palloni, Alberto (2004). Persistent marriage regimes in changing times. *Journal of Marriage and the Family*, vol. 66, n.º 5: 1201-1213.

Juárez, Fátima y Llera Silvia (1996). The Process of Family Formation during the Fertility Transition. Guzmán, José M. et al, eds. *The Fertility Transition in Latin America*. Oxford: Clarendon Press.

Rosero-Bixby, L., Castro-Martín, T. and Martín-García, T. (2009). Is Latin America starting to retreat from early and universal childbearing? *Demographic Research* 20(9): 169-194.

Rosero Bixby L. (1996). "Nuptiality trends and fertility transition in Latin America. Guzmán, José M. et al, eds. *The Fertility Transition in Latin America*. Oxford: Clarendon Press.