About the spatiality of Mexico's first conjugal union: a look through the spatial distribution of mean age at first union.

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Abstract

The goal of this research is to examine the spatial distribution of the mean age at first conjugal union of Mexican men and women, with respect to the municipality of residence in year 2000, using data from the XII General Population Census. It is considered, in the first place, a study of Moran's I coefficient to determine the degree of spatial autocorrelation of the mean age at first conjugal union and its corresponding levels of concentration or dispersion. Secondly, while incorporating a geospatial part, the effect of certain factors (such as migration, education, socioeconomical status, among others) is studied over the calendar of the mean age at which Mexican men and women are joined conjugally. Preliminary results show that the geospatial distribution of the mean age at first union is autocorrelated but shows different behaviors for men and women on certain regions: northwest, central-west and southern.

Extended abstract

The first conjugal union is crucial along the life of individuals for it marks one of adult life's most important transitions: where people adopt a new social role (Parrado y Zenteno, 2005). Furthermore, in the Mexican case, according to some studies, entering union initiates a reproductive life, in most cases (Rojas, 2002; Sebille, 2005). This principle has caused that most studies of nuptial nature take into account, mainly, feminine behavior (Gayet, 2002).

Among the factors that regulate the calendar of such an important event in people's life, degree of education and job opportunity for women stand out. Another factor associated to union's temporality is the way in which men and women are united, for if only legal unions are considered, these occur, on average, about a year after the group of legal and consensual unions take place (Quilodrán, 1993a). This situation reflects that distinct ways of getting into union reveal different forms of family views and diverse ways of understanding reproduction and structuring of social groups (Quilodrán, 1993b).

Likewise, one cannot forget that the environment where people grow influences the timing in which certain crucial events take place along their life course. Some studies show that the moment of first union varies according to its geospatial location. For example, Quilodrán (2001), based on information from fertility surveys, accounts for three regions in the country that show distinct conjugal dynamics at a state level: the Southern Pacific, the Gulf and the Northeast are characterized by an early age at first union, reduced celibacy and large proportions of common-law unions, civil marriages and interrupted unions. The Northeast, Southeast, Central

and North with average ages of first union above 20 years, definitive celibacy is more usual and common-law unions and interrupted ones are less common. Finally, the West shows the largest celibacy on record for the country and a low proportion of common-law and interrupted unions.

The goal of this research is to examine the spatial distribution of the mean age at first conjugal union (using Hajnal's SMAM indicator) of Mexican men and women, with respect to the municipality of residence in year 2000. In this sense, we must recall Tobler's first Geographical Law (1970) which states that "everything is related to everything else, but near things are more related than distant things", and population phenomena are not the exception. Apart from studying this spatial distribution, the influence of economic and sociodemographic factors that can have an effect on entering union, was analyzed. Such factors can include: schooling, type of union, location size, migration, indigenous condition and religious preference, among others.

In order to attain this goal, this research considers, in the first place, a brief exploratory analysis of the nuptial census data. Secondly, a study of Moran's *I* coefficient to determine the degree of spatial autocorrelation of the mean age at first conjugal union and its corresponding levels of concentration or dispersion. Finally, while incorporating a geospatial part, the effect of certain factors (see Table 1) is studied over the calendar of the mean age at which Mexican men and women are joined conjugally. Data is obtained from a 10% sample of the XII General Population Census.

Preliminary results show that the geospatial distribution of the mean age at first union is concentrated on certain regions, as can be seen in Maps 1 and 2 that show the distribution of the mean age at first union for men and women, respectively. 2443 municipalities were analyzed and, in average, men enter union at the age of 24.5 years, while women do at 22.2 years of age. Although the measures of central tendency for the country have been stable for the past century (Quilodrán, 2001), the behavior at a local (municipal) scale is different for the north, central and southern portion of the country.

Map 3 shows the relationship between the number of legal and non-legal unions by municipalities. In general, there are more legal than free unions along the country. However, some municipalities in the northwest, center-east and southeast, form corridors where it is possible to find an equal number of free and legal unions. Also, in some municipalities of central and southeastern states there are more free unions than marriages (at least two free unions per marriage).

With respect to spatial autocorrelation, results agree with those of Quilodrán (2001), in the sense that there is some degree of spatial association, although marginal, between municipalities with high (or low) values for the mean age indicator in the northeast, west and south of the country. In order to detect the presence of clusters of high/low values for the mean age at union, local indicators of spatial autocorrelation (LISA) where used, in particular, Local Moran's *I*. These results are shown in Maps 4 and 5, for men and women, respectively.

As it was mentioned before, there are certain factors that can affect the temporality of entering union. These socioeconomic and sociodemographic factors where studied by means of

geospatially controlled least-square regressions. Thus, for men and women, an important result of analyzing these variables is that education, migration, type of union and religion, play an important role in delaying entering union (Tables 2 and 3).

This research found that nuptial dynamics in Mexico allows detecting important patches where the mean age at union for men and women is higher in the West and Center. Also, there are regions in the Southeast where earlier ages for men and women can be located. Nevertheless, there are combinations of late ages for men and early ages for women in the Northwest, an interesting situation for the study of gender arrangements.

Along the country it is possible to see that most of the counties have more marriages (civil, religious or, civil and religious) than free unions, but there are corridors and patches in the Northwest, South Pacific and in the coast of the Gulf of Mexico, where the number of legal and non-legal unions are, more or less, the same.

The study of the effect of some indicators allowed taking a look at the role that immigration to the United States plays in the displacement of the mean age at marriage of men and women (at least for the year 2000). It was found that it does, in fact, have an impact delaying the ages of both men and women entering union. One of the questions that have risen from this conclusion is then, what can we expect for the mean age at marriage if the migration policy becomes stricter and the border closes for immigrants? How will it affect the Mexican nuptial dynamics?

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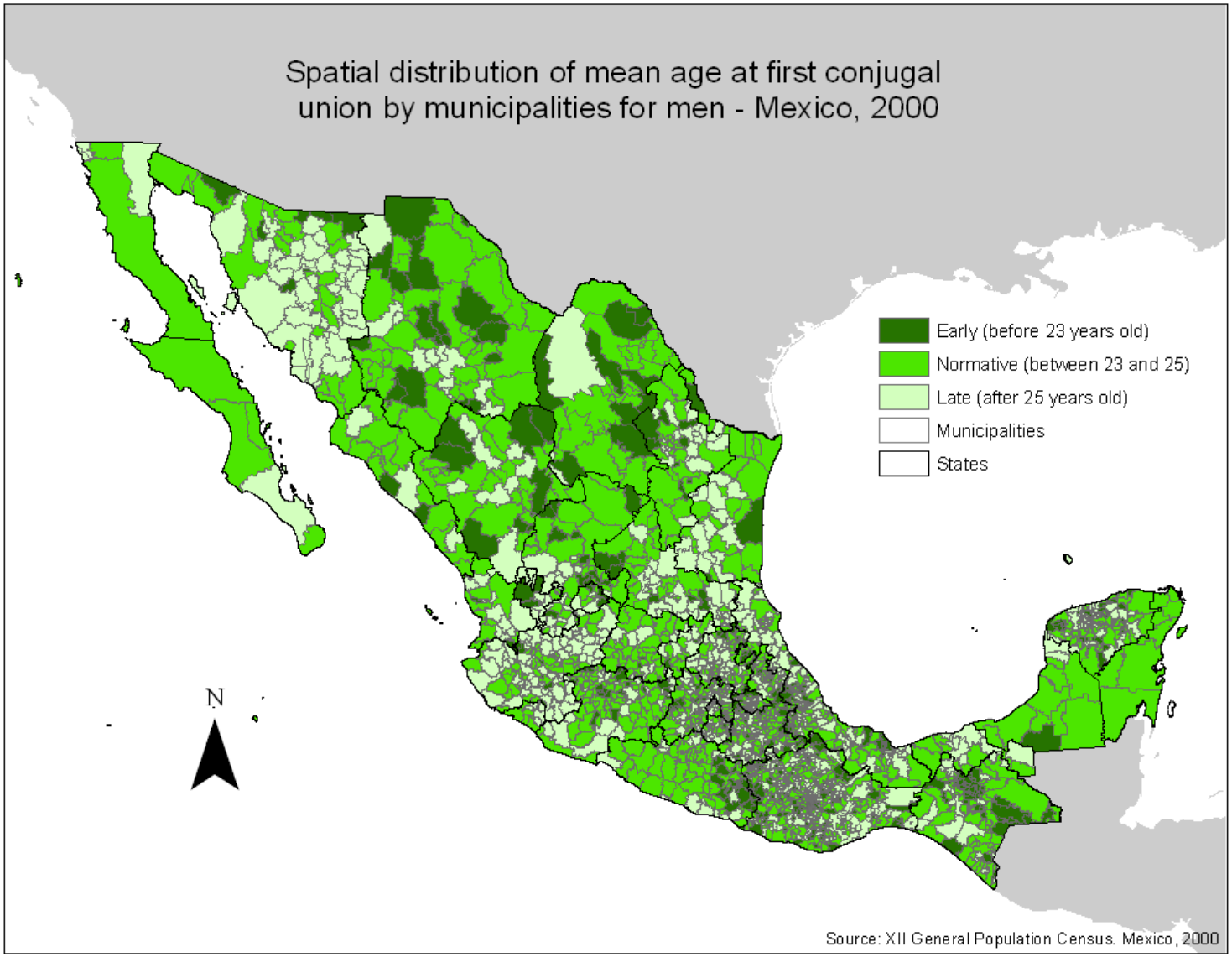
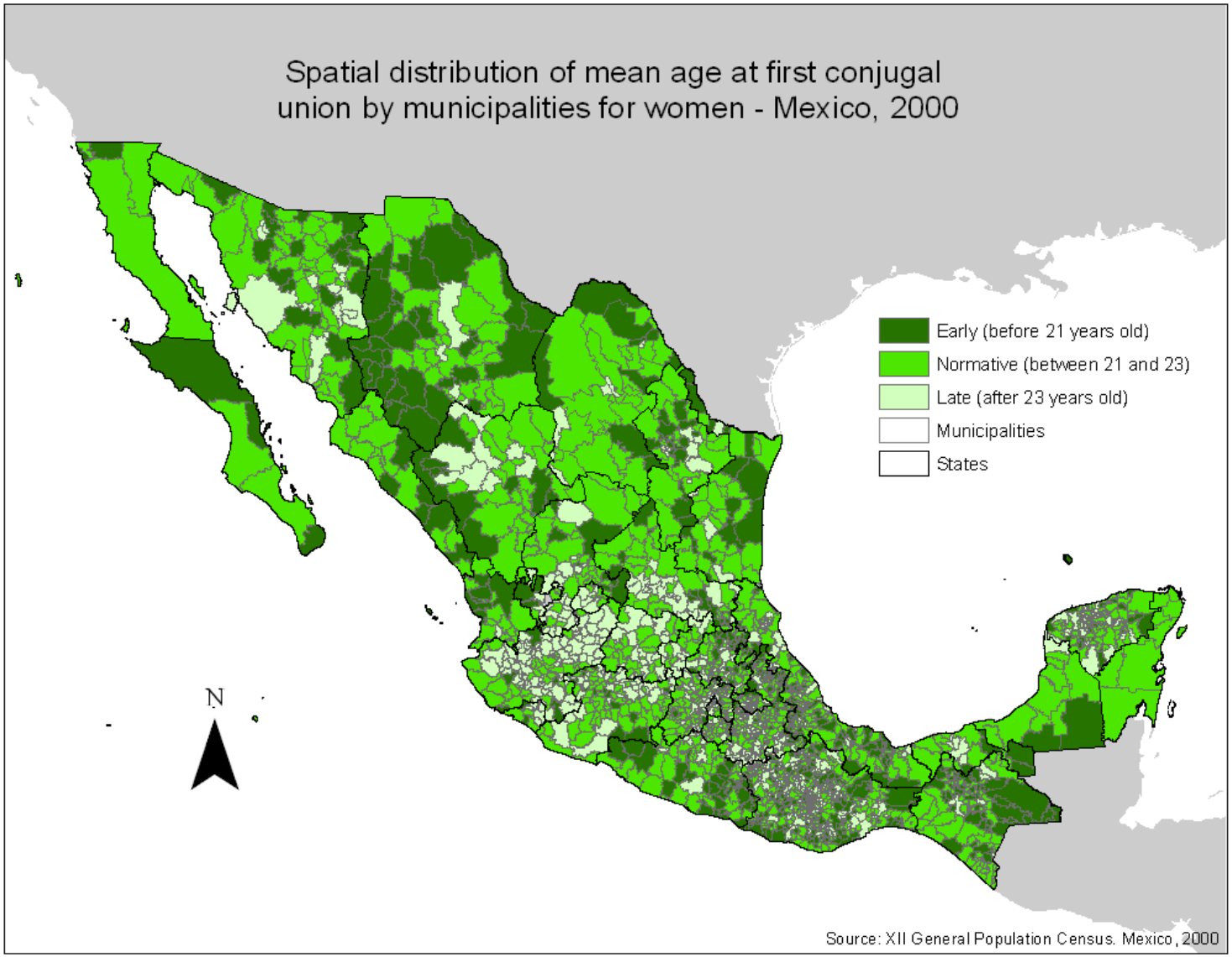
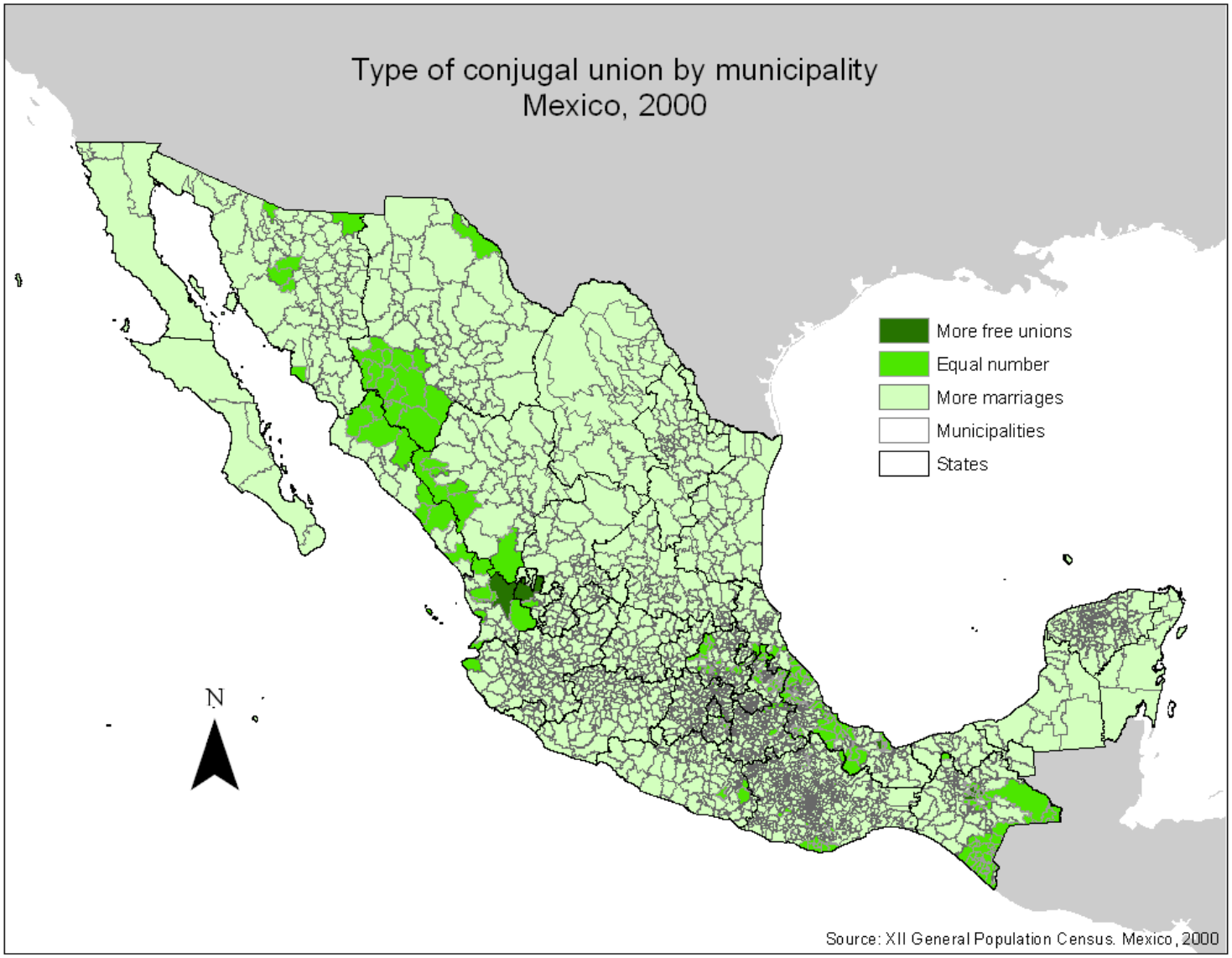


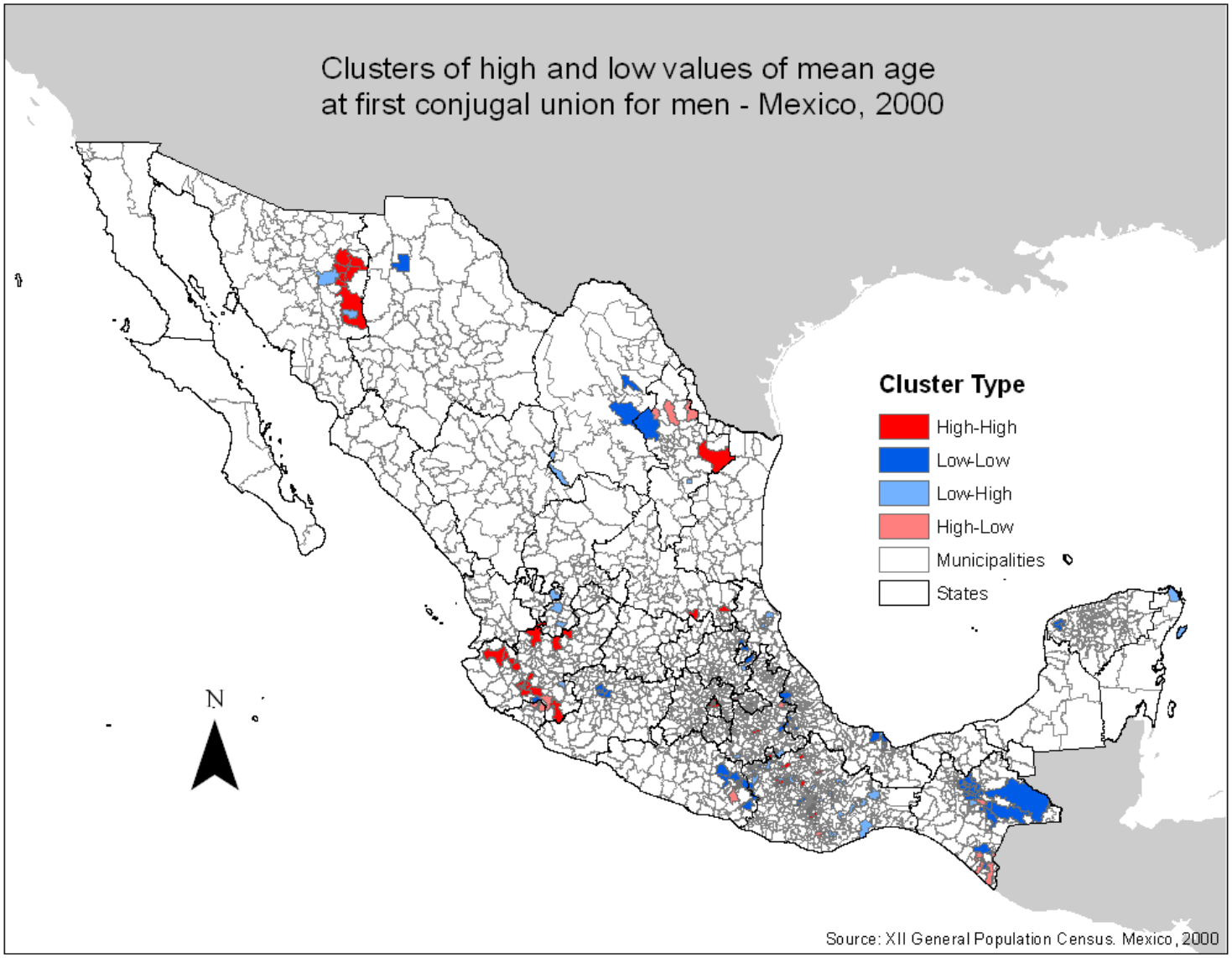
Map 1. Spatial distribution of mean age at first conjugal union by municipalities for men. Mexico, 2000.



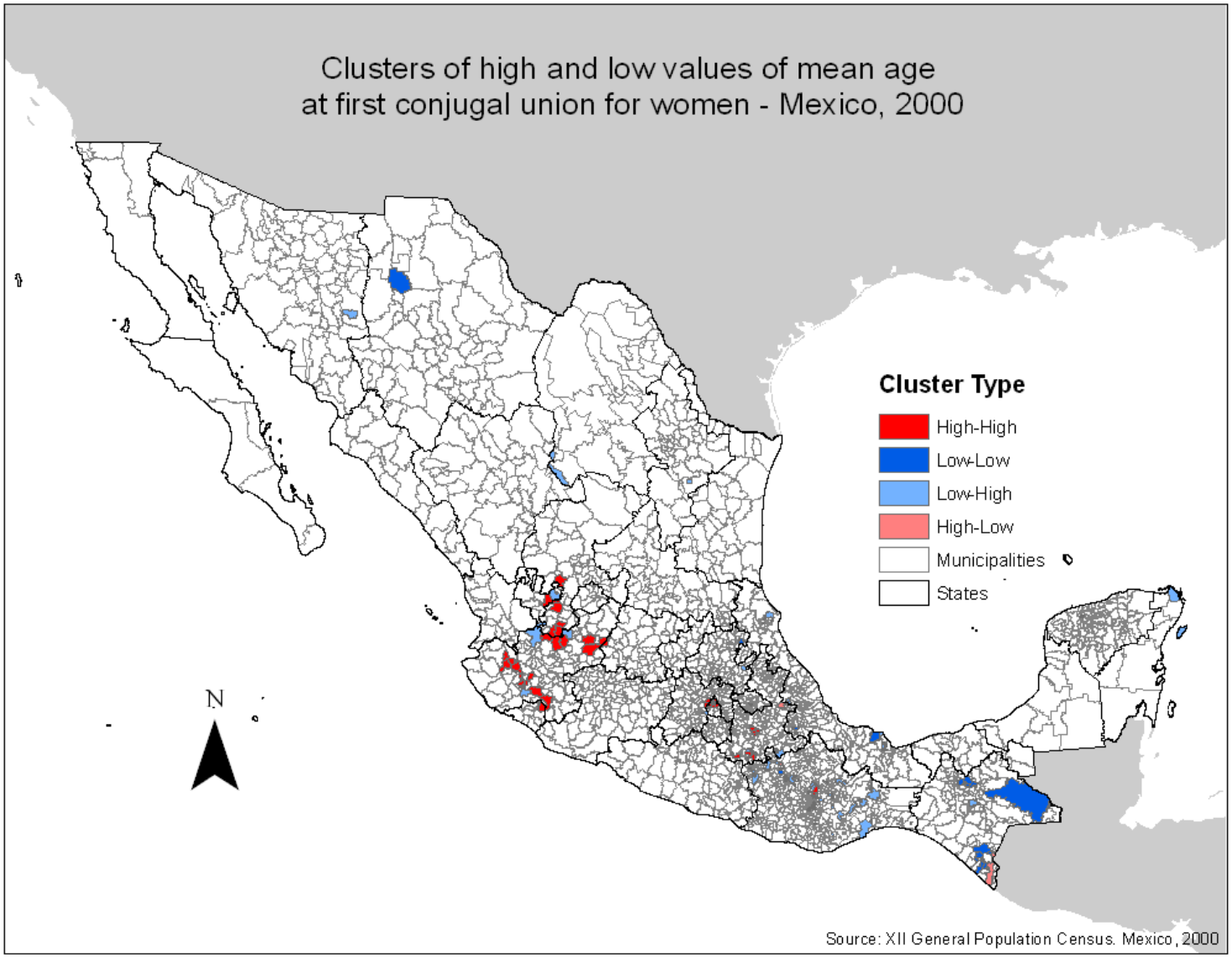
Map 2. Spatial distribution of mean age at first conjugal union by municipalities for women. Mexico, 2000.



Map 3. Type of conjugal union by municipality.



Map 4. Clusters of high and low values of mean age at first conjugal union for men. Mexico, 2000.



Map 5. Clusters of high and low values of mean age at first conjugal union for women. Mexico, 2000.

TABLE 1
Variables for regression models

Variable	*Description*	*Source*
Dependent		
SMAM-M²	*Squared mean age at first conjugal union, men*	Census, 2000
SMAM-W²	*Squared mean age at first conjugal union, women*	Census, 2000
Independent		
Education	Average years of schooling	Census, 2000
Income	Percentage of work population receiving at least five minimum wages per month	Census, 2000
Migration	Percentage of households receiving remittances from USA	CONAPO*
Type of union	Number of legal unions per free unions	Census, 2000
Indigenous condition	Percentage of indigenous population	CDI**
Religion	Percentage of catholic population	Census, 2000

* Consejo Nacional de Población - National Population Council
**Comisión Nacional para el Desarrollo de los Pueblos Indígenas - National Commission for Indigenous People Development

TABLE 2
Spatial linear regression model results for men. Mexico, 2000.

Dependent variable: squared mean age at first conjugal union, men (SMAM-M²)
Method: linear spatial regression
N=2443

Variable	*Coefficient*	*Standard Error*	*z-value*
Constant	454.80***	18.153	25.054
Education	11.33***	2.144	5.284
Income	-13.21	177.219	-0.075
Migration	1.14***	0.285	3.996
Type of union	0.93*	0.266	3.501
Indigenous condition	-0.10	0.071	-1.441
Religion	0.84***	0.173	4.829
λ	0.35**	0.028	12.577
Number of variables	7	Coefficient Lag (λ)	0.347
Degrees of freedom	2436	Logarithm of likelihood	-14217.942
Mean of SMAM-M²	601.429	Akaike's criterion	28449.900
Standard deviation of SMAM-M²	87.050	Schwartz's criterion	28490.491
R squared	0.143	Breusch-Pagan test	133.31***

Variable significance: ***p<0.00001; **p<0.0001; p<0.001

TABLE 3

Spatial linear regression model results for women. Mexico, 2000.

Dependent variable: squared mean age at first conjugal union, women (SMAM-W^2)
Method: linear spatial regression
N=2443

Variable	*Coefficient*	*Standard Error*	*z-value*
Constant	314.86***	15.506	20.306
Education	15.98***	1.832	8.723
Income	-160.80	151.578	-1.061
Migration	2.14***	0.244	8.765
Type of union	1.95***	0.227	8.585
Indigenous condition	0.16	0.060	2.725
Religion	0.71**	0.148	4.819
λ	0.34***	0.028	12.327

Number of variables	7	Coefficient Lag (λ)	0.342
Degrees of freedom	2436	Logarithm of likelihood	-13839.281
Mean of SMAM-W^2	494.049	Akaike's criterion	27692.600
Standard deviation of SMAM-W^2	79.771	Schwartz's criterion	27733.168
R squared	0.251	Breusch-Pagan test	118.54***

Variable significance: ***p<0.00001; **p<0.0001; p<0.001