Religious affiliation and indigenous fertility in Chiapas, MX

Eunice D Vargas Valle
Joseph E Potter
University of Texas at Austin
Draft *Sep, 2007*

ABSTRACT

The purpose of this paper is to analyze religious differentials in indigenous fertility. Given that indigenous fertility has been characterized by the presence of children soon after marriage and until mature ages, the idea is to analyze if women of different religions have modified this reproductive pattern. First, we calculate the ASFRs and TFRs for indigenous women in Chiapas, MX by religious affiliation. Then, using logistic regression models, we assess the religious differentials in fertility for indigenous women in the age groups 15-19, 20-29 and 30-39, net of the effect of socioeconomic covariates. The results show that, in comparison with Catholics, Historical Protestants and Biblical Non-Evangelicals have higher adolescent fertility, but lower fertility after age 30. This change in fertility schedules does not lead to large differentials in fertility levels by religious affiliation, but points to different ways that religion may affect the reproductive process.

INTRODUCTION

Since the 1970's fertility has decreased considerably in Mexico due to changes in population development and the implementation of a population policy focused on family planning (CONAPO, 1999). However, the pace of the fertility decline has been heterogeneous within regions and populations due to the persistence of traditional norms and customs related to marriage and human reproduction, the socioeconomic marginalization of some groups, the unmet demand of contraception, and the lack of opportunities for women to study and work, and decide on the regulation of their fertility.

In this sense, the high fertility among indigenous people continues to be one of the most important topics of population policy together with the improvement of their living conditions and the satisfaction of unmet needs for family planning (Barroso, 2004; Programa Nacional de Población, 2001). Poverty, the lack of access to information and family planning services, and gender inequalities are part of daily life in indigenous communities, and influence their reproductive behavior (Chávez-Galindo et al., 2005). In this context, the execution of a family planning program that breaks the *mestizo* imposition of goals in fertility levels among indigenous people and takes in consideration their cultural values and rights over their reproduction is a challenge (Del Popolo, 2005).

The fertility levels of indigenous communities are influenced by early marriage, which is traditionally considered as the entrance to adulthood and increases exposure to the risk of getting pregnant at early ages. Moreover, a high value of children leads to high fertility levels (Gutierrez-Sanchez, 2000); especially in rural areas, where the supply of labor still depends on the size of the family and family is the main source of support for an individual in time of crisis (Serrano-Carreto & Fernandez-Ham, 2003).

Besides traditional norms regarding fertility, probably the most important feature that distinguishes the reproductive behavior of indigenous communities from non-indigenous populations is the low use of contraceptive methods. For example, the prevalence of contraception among married indigenous women in Mexico was 44.5% in 1996, which is equivalent to the national prevalence registered in 1980 (Serrano-Carreto & Fernandez-Ham, 2003).

Even though Chiapanecan indigenous population does not have fertility rates as high as those of indigenous people in Nayarit (TFR=6.1), it has a Total Fertility Rate (TFR) of 5 children per woman, which is higher than the TFR for the indigenous people in Mexico (4.2) and exceeds by 1.5 children per woman the TFR for the state of Chiapas (INEGI, 2000b). Tzotzil, Tzeltal and Chol are the most numerous indigenous groups in Chiapas and the three present an age structure typical of high fertility and infant mortality (Fernandez-Ham, 1998). Among these ethnic groups, getting married at 17 years old and giving birth within the next year is the usual practice as well as to continue having children until the end of the reproductive life (Gutierrez-Sanchez, 2000).

Also, gender inequalities and violations of human rights affect the fertility regulation of indigenous women in Chiapas. For men, for instance, it is socially permissible to have more than one woman and any woman may be sent back to her parental home if she turns out to be infertile after marriage. Culturally, children have great value because indigenous people expand their communitarian networks and re-define their social identity through parenthood or motherhood (Gutierrez-Sanchez, 2000). In addition, the decision regarding a woman's contraceptive use is commonly taken by other people, either husbands or health workers (Nazar et al. 2003; Kirsh and Arana, 1999).

In recent years, however, substantive social, economic and cultural transformations related to the integration of Chiapanecan regions to the global economy may have modified the indigenous view of reproduction, reducing the demand for children and altering their fertility schedule. The agricultural crisis and the demographic pressure on the land have favored temporal migration in search of work as well as migration of indigenous people to regions of Chiapas that were not traditionally indigenous (Martinez-Velasco, 1999). Also, since the 1970's, tourism has led to the development of a market for handicrafts and employment in services. Although hand crafting was in its origin a women's economic strategy, soon entire families began working in this sector (Rus, 1990). Nowadays, 21% of indigenous population resides in urban areas, an increment of 7% between 1990 and 2000; 76% of the active population in the labor force works in agriculture; and indigenous literacy has increased from 46% to 57% in the last decade (INEGI, 2000a).

Among the cultural changes that indigenous people have experienced recently is the growth of Protestant churches.[1] This is thought to be also an indirect consequence of modernization, since Protestant religions may fit better with the new economic activities than the traditional system of *cargos* that persisted within Catholicism, and facilitate communitarian cohesion in an environment of economic and social instability (Dow, 2005; Marroquin, 1996).

In Chiapas, a total of 32% of indigenous people are members of Protestant religions, in comparison with 19% of non-indigenous people (INEGI, 2000c). As a consequence of conversion, people expand their networks beyond the immediate kin, cope better with poverty, stop drinking and spending money on saint festivities, value literacy as means to understand the sacred books, learn about hygiene and western medicine, and alter their gender relationships (Mariz, 1994; Rostas, 1999; Turner, 1979; Robledo, 2002). Regarding the last point, it has been shown that women can be empowered by their participation in the church and the re-orientation of men's goals toward family and church wellbeing (Rostas, 1999; Brusco, 1993).

Since conversions are linked to changes in world views and life-styles, different reproductive patterns may be registered among members of distinct Churches. Teachings regarding the purpose of marriage may influence fertility. Of particular interest for this study are the beliefs of Roman Catholics and Protestants. Both Catholic and Protestant churches agree that sex should be restricted to marriage. Nevertheless, for Roman Catholics marriage is exclusively for procreation and contraceptive practices are prohibited, except abstinence. In contrast, Protestant denominations that are members of the World Council of Churches support contraceptive practices affirming that the purpose of human sexuality is not only procreation but also human welfare and pleasure (Schenker, 2000). However, some Conservative Protestants side with the Catholic position on contraception (Goodson, 1997). In Chiapas, Protestant churches, with the exception of some conservative Pentecostal churches,[2] do not oppose contraception and indeed, either support government reproductive health programs or include family planning in their own health programs to inform believers

[1] In this paper we use "Protestants" to name non-Catholic religions included under the Historical, Pentecostal or Evangelical, and Biblical Non-Evangelical umbrellas.

[2] Personal communication with Moises Ocampo, physician and director of the training program of indigenous health promoters in the Centro Cultural Tzotzil, San Cristobal de las Casas, Chiapas, MX, September 2006.

about the pro and cons of contraception and the effect it may have on women's health and their family's wellbeing (Ocampo-Torres, 1994; Ocampo-Torres, 1995).

Independently of religious ideology regarding contraception and marriage, McQuillan (2004) points out that religion can influence fertility only if churches have the means to do so, say by either informal social pressure or via concrete rewards. Also, he argues that the impact of religious teachings depends on a sense of attachment to the religious community, and its norms and values related to reproduction.

In the case of Mexico, Catholic norms against fertility regulation do not seem to have had a strong impact on fertility levels. Mexico experienced a very rapid and sustained fertility decline since the 1970's, in spite of being 96% Catholic. At the end of 1960's, 61% of Mexican Catholics thought that nobody or only few people followed Catholic ordinances regarding reproduction (Camarena-Cordova, 1991).

Moreover, in Chiapas, the Catholic faith is a mixture of Roman Catholicism and popular traditions, and religious attendance and participation among indigenous Catholics are not as strong as among Protestants (Dow, 2005; Rostas, 1999). So among indigenous Catholics, higher fertility compared to Protestants might be the result of traditional beliefs rather than Catholic ideological influence. However, given the links between indigenous political movements and the missionary work of liberation Catholicism, indigenous Catholics actively involved in indigenous councils may have taken the Catholic ideology on contraception as a political instrument against governmental violations of informed consent for female sterilizations. In 1992, tzotziles, tzeltales, choles and zoques all questioned the government's aim of reducing indigenous fertility, and declared their opposition to surgical contraceptive methods and demanded information about contraceptives and respect for indigenous reproductive choices (Barroso, 2004).

In contrast, though syncretism is present to some extent in Protestantism, Protestants' observance of religious norms is more strictly enforced, and congregations constitute essential means of socialization and sources of information and ideas for their members. Thus, it is possible that their openness toward contraception and their insistence on restricting sex to only occur within marriage may affect fertility patterns in different ways, as has been found in other parts of the world (Addai, 1999; McKinnon et al, 2006). Also, changes in life-style that may accompany conversion such as changes in gender relationships,

coping with poverty and reliance on Western medicine may affect reproductive behavior by empowering women, reducing the demand for children, and increasing the use of health services. For instance, although some indigenous women may avoid local clinics for fear of an undesired sterilization; pastors may encourage them to visit doctors and use preventive health care.[3] Finally, the fact that Pastors are allowed to marry, while Priests are not, may let Protestants take missionaries or pastor's reproductive histories as examples to follow.

The purpose of this study is to analyze religious differentials in indigenous fertility in an attempt to understand better how social institutions shape reproductive behavior. We study whether there is a religious differential in fertility at different points of the reproductive life span--during adolescence, as young adults, and at mature ages--, and if so, whether or not this relationship may be accounted for by socioeconomic differentials. Given that indigenous fertility has been characterized by the presence of children soon after marriage and the continuation of reproduction until mature ages, the idea is to analyze if women of different religions have modified this reproductive pattern. Religious differentials in indigenous fertility are assessed using logistic regression models.

DATA

We use the 10% sample of the Mexican Census (INEGI, 2000d). The file contains individual level data on the birth date of the last child born alive, and a set of socioeconomic variables, including indigenous language and religious affiliation. In addition, it provides information at the household level that can be linked to the individual level data file.

A total of 113,187 women of reproductive ages (15 to 49), of which 34% are indigenous, have information on recent fertility. For the multivariate analysis, we utilize data of 30,774 indigenous women with information on indigenous language, recent fertility, religious affiliation and the selected controls: age, bilingualism, years of education, medical services used, rural residence (in places with less than 2,500 inhabitants), recent immigration (inter-state or inter-municipality migration in the period 1995-1999), and municipality (used to compute the region of residence).

[3] Interview with Pastor Dimas Bravo, President of the Alliance of Evangelical Pastors in San Cristobal de las Casas, Chiapas, MX, August, 2006.

Indigenous language is used to identify indigenous women, even though we are aware of its possible limitations. The linguistic criterion may underestimate the amount of indigenous women when they have forgotten their dialect, speak it only partially, do not declare it, or deny it for fear of ethnic discrimination (Corona, 2001). However, the item about ethnic group membership, which is also available in the sample survey as a measure of ethnicity, presented large numbers of missing values.

We follow INEGI's classification of religious affiliation (INEGI, 2000d). Protestant religions more directly related to the Protestant Reformation are classified as Historical Protestants. Under the category Pentecostal-Evangelical, Pentecostals, Neo-Pentecostals and groups of Pentecostal roots and Evangelicals are included. Finally, Biblical non-Evangelical groups, including Seventh Day Adventists, Jehovah Witnesses, and Mormons, and those who declared not being associated with any religion are considered separately. The most important churches in the different broad religion categories are: Presbyterian among Historical Protestants, Pentecostal among Pentecostal-Evangelicals, and Adventist among Biblical Non-Evangelicals.

With respect to the covariates, use of medical services requires clarification. Non-users are used as reference and users are categorized by the place where they seek medical care. Users of services provided by the social security system are in one category, Instituto Mexicano del Seguro Social (IMSS) and Instituto de Salud y Seguridad Social de los Trabajadores del Estado (ISSSTE). Users of Centro de Salud of the Secretaria de Salubridad y Asistencia (SSA) and IMSS-Solidaridad are considered separately, since these services target the uninsured population. In another category are those who make use of private or other kinds of services.

Also region deserves a note. We classify municipalities into socioeconomic regions (LAIGE-ECOSUR, 2007), but only differentiate the regions that are 40% indigenous. The rest are compressed in a residual category. Most municipalities in the selected regions present very high indexes of marginalization. The colonial capital, San Cristobal de las Casas, is located in the region of Altos (Highlands), which is still an administrative, economic and religious center. Here Tzotzil and Tzeltal are the most important ethnic groups and their population growth have led to high pressure on the land and, combined with political and religious conflicts, to repeated expulsions (Martinez-Velasco, 2005). As a result, Norte

(North) which was originally populated by Choles and Zoques, now is predominantly inhabited by Tzotziles. Lastly, the Selva (Rainforest) region has received substantial numbers of migrants, especially since the 1960's when the government encouraged immigration to alleviate the demographic pressure in other regions. Although for centuries only Lacandones settled in this area, now Tzeltal and Chol populations form the majority and present high level of social cohesion and organization (Sanchez-Perez et al, 2001).

METHODOLOGY

Using the data on the birth date of the last born child in 1999, we calculate age-specific fertility rates for indigenous-non-indigenous and by religious affiliation. The statistical analysis is based on logistic models, implying that the log of the odds of having a child during 1999 is modeled as a function of the categorical variable for religious affiliation and the socioeconomic covariates. We apply antilogs to both sides of the logistic regression equation and interpret the exponential (exp) of the coefficient β as an effect on the odds of having a child for women in a given category with respect to the reference category. This means that what is expressed in the exp β is the odds ratio between categories.

We estimate the logistic models of fertility for three age groups: 15-19, 20-29 and 30-39. In the first model, we only include religious affiliation and age. In the second, we add education and bilingualism because of the impact they could have in the access to information about contraceptive use and *mestizo's* values on childbearing. In the last model, we include the rest of the independent variables. The use of governmental health services is expected to reduce fertility, since the family planning policy has been implemented through them (CONAPO, 1998). Living in rural communities and in poor household conditions are known determinants of high fertility (Rubin, 1989). Fertility may also be higher for indigenous immigrants due to the relevance of migration from small rural places and/or a higher demand for children for labor supply given the precariousness of the socioeconomic situation of recent migrants. Finally, the region where people live could capture other unmeasured socioeconomic characteristics such as differences in agricultural production and social cohesion.

We employ Stata software to estimate the Total Fertility Rates and the logistic models. We use weights only for the fertility rates and the descriptive analysis of the sample, and present un-weighted logistic models.

RESULTS

A) FERTILITY RATES BY ETHNICITY AND BY RELIGIOUS AFFILIATION

Figure 1 illustrates that indigenous women in Chiapas have higher fertility at all age groups than non-indigenous women in 1999. Although both present a young fertility schedule with a peak between the 20 and 24 years old, after this maximum level, the fertility schedule of indigenous women is characterized by a convex shape, while that of non-indigenous women exhibits a concave form. Non-indigenous fertility starts a sharp decline after the ages 25-29, while indigenous fertility begins this decline after the ages 35-39. Consequently, the greatest gap in the ASFR by ethnicity is registered during the thirties.

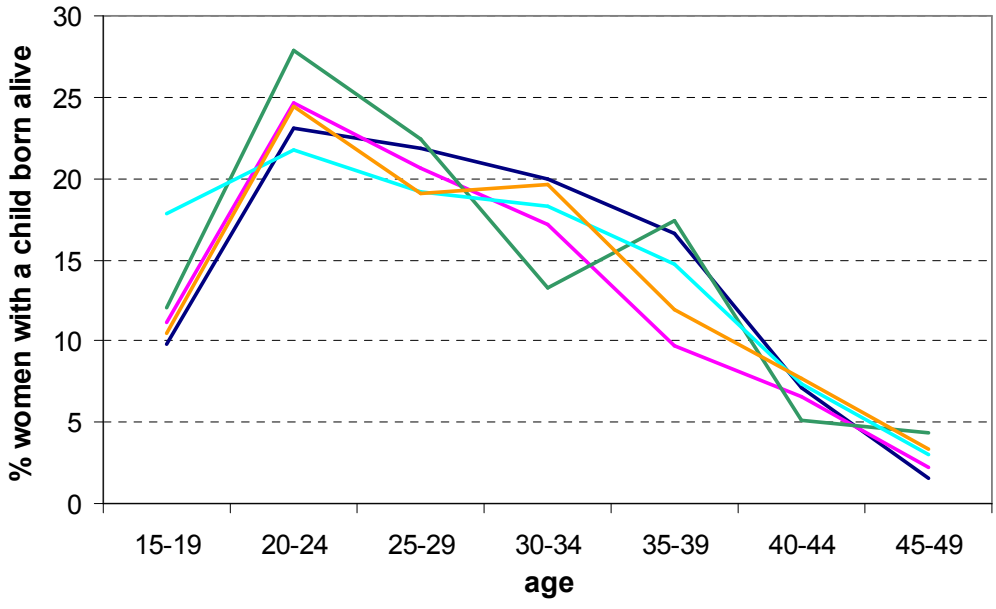
The high fertility levels at all ages translate into very high fertility levels for indigenous women. As is shown in **Table 1** (Annex A), their TFR is 4.93 children per woman, compared to 3.05 children per woman for non-indigenous women, a difference of almost 2 children. The TFR estimations presented here are consistent with the estimations for indigenous women and for the total of women in Chiapas published by the Census Bureau, 5 and 3.5 correspondingly (INEGI, 2000b). A difference of 0.07 was found in the TFR for indigenous women and the same TFR was obtained at state level.

There are relevant differences in the ASFRs by religious affiliation among indigenous women (**Figure 2**). In general, Catholics show lower fertility levels at the beginning of the reproductive life (age groups 15-19 and 20-24) than Protestant women and those with no affiliation, with the exception of Biblical Non-Evangelicals who exhibit a much lower fertility level at ages 20-24.

FIGURE 1. Age Specific Fertility Rates by ethnicity in Chiapas, 1999

Source: Table 1.

FIGURE 2. Age Specific Fertility Rates by religious affiliation among indigenous women in Chiapas, 1999



Source: Table 2.

However, this trend is inverted from the age group 25-29 to the age group 35-39. Catholic fertility shows a clear convex curve within these ages. The Catholic ASFRs are higher than those of the other groups. Historical Protestants exhibit a faster fertility decline than Catholics and the fertility gap between women of these religions increases up to the age group 35-39, where Catholic fertility is 1.72 times larger. Biblical Non-evangelical women also present lower age-specific fertility rates than Catholics, although the shape of the fertility curve within this age range is similar to that of Catholics.

The fertility schedule of Pentecostals is less clear. Two possibilities exist: a) that the ASFRs for ages 30-34 is underestimated, and/or b) that the rate for ages 35-39 is overestimated. This discontinuity in the curve may be related to sampling problems in the data and assessing them is beyond the goals of this study. The use of unweighted estimates corrects the shape of the ASFR. The unweighted fertility rates are about 19% for ages 30-34 and 15% for ages 25-39, instead of 13% and 17% respectively. However, if we present unweighted rates, the TFRs would not be consistent with those reported by INEGI for other subpopulations.

Although the ASFRs by religious affiliation differ greatly, they do not result in very different TFRs. The only case is that of Historical Protestants, for whom, in spite of their high levels of fertility up to ages 20-24, the reduction of their fertility at older ages leads them to have a TFR of 4.6 children, which is evidently lower than that of 5 children per woman for Catholics.

B) MULTIVARIATE ANALYSIS

The sample used for the multivariate analysis of indigenous fertility within the ages 15-39 is 54% Catholic, 16% Historical Protestant, 10% of Pentecostal Evangelical, 8% of Biblical Non-Evangelical and 11% with no religious affiliation (**Table 3**). These are women in difficult socioeconomic conditions: 38% have no schooling, 57% do not speak Spanish, 70% live in houses with dirt floors, 15% are not users of health services and 72% reside in rural areas. They live mainly in two regions: Selva, 39%, and Altos 33%. On the other hand, recent immigration is not very high, only 4% immigrated during the last 5 years. Although we estimated frequencies by adolescents, youth and women at mature ages we do not

present them since we could not find any clear trend. They are very similar to the total distributions.

The logistic regressions demonstrate that Catholic indigenous women have lower adolescent fertility, but higher fertility at mature ages compared to Protestant indigenous women (**Table 4**).

The baseline logistic model for adolescent fertility shows that the odds of having a child in 1999 for Historical Protestants and Pentecostals are 1.3 times that of Catholics and for Biblical Non-Evangelical 1.5 times that of the same reference group. However, the following two models reveal that part of this fertility gap is due to differentials in the socioeconomic conditions. Their odds ratio of having children decrease and those for Pentecostals and Biblical Non-Evangelicals lose significance once education and bilingualism are introduced in the model. Taking into account the rest of the socioeconomic variables, the odds of adolescent fertility for Historical Protestants go up, remaining 33% higher than that of Catholics, and attaining significance at the 95% confidence level.

For explaining adolescent fertility, education and migration are the main control variables. Having 9 or more years of schooling versus no schooling decreases the odds of having children by 74%, while migrants present 47% higher odds of having children than non-migrants. Also having any kind of floor (that is not dirt) reduces these odds by 18%, and living in Altos or Selva, compared to live in Norte, does so by about 12%.

The odds of having children during one's twenties show less variation by religious affiliation. The only statistically significant difference is found between Biblical Non-Evangelicals and Catholics. But here the trend is the opposite of that for adolescent fertility. Biblical Non-Evangelicals show about 0.84 times the odds of having children as those for Catholics. This gap is slightly stronger and more significant with the introduction of socioeconomic covariates. The odds for those with 9 or more years of education are 0.58 times that of those with no instruction. Having floors reduces the odds of having children by 22%, and living in Selva versus Norte by 17%. In contrast, being a recent migrant increases these odds by 16%.

The fertility behavior by religious affiliation during mature ages is very interesting. Not only do Biblical Non-Evangelicals show lower fertility than Catholics, but also Historical

Protestants. The odds of having children for Historical Protestants are about 0.74 times that of Catholics. This fertility gap remains statistically significant after the addition of covariates. On the other hand, the odds ratio for Biblical Non-Evangelical versus Catholics decreases from 0.85 to 0.78 and become more significant, after controlling for socioeconomic covariates.

Yet the effect of education on fertility is not as strong at mature ages as it is at younger ages. Its impact becomes insignificant with the addition of the other socioeconomic covariates. Not having floors of dirt decreases the odds of having children by 32%. The odds of users of health services provided by the social security system are 0.75 times that of non-users. Also, living in rural areas increases the odds by 17%, compared to living in urban areas. This is the only case where both use of health services and rural residence have a net effect on fertility. Lastly, indigenous fertility at mature ages is higher in Norte than in Altos or Selva.

CONCLUSIONS

The objective of this paper was to analyze whether or not there are differentials in indigenous fertility by religious affiliation at different times of the reproductive life: during adolescence, as young adults, and at mature ages. To accomplish this purpose we described the ASFR and TFR by ethnicity and for indigenous women by religious affiliation, and then we assessed religious differentials in the odds of having had a live birth in 1999 for women in the age groups 15-19, 20-29 and 30-39, net of the effect of socioeconomic covariates.

The analysis of the fertility schedules suggests that there is an important heterogeneity in the fertility behavior of Chiapanecan women. In general, indigenous fertility is much higher than that of non-indigenous women and after the age group 20-24 the shape of the decline in the ASFR is convex. This trend is similar to that of Catholics, but Protestant' fertility presents variants. Protestants exhibit higher adolescent fertility than Catholics, but Catholics show higher fertility during their thirties.

The results of the multivariate analysis corroborate this trend. In general, Protestants have a higher adolescent fertility, but lower fertility at later ages. The odds of adolescent fertility are greater by at least 29% for every Protestant group. However, after the addition of

socioeconomic covariates, only the effect of Historical Protestant religions on adolescent fertility maintains statistical significance at a confidence level of 95%. On the other hand, Biblical Non-Evangelicals present a lower fertility during and after the twenties, and Historical Protestants also exhibit this tendency during the thirties. The odds of having a child during and after the youth are lower for Biblical Non-Evangelicals versus Catholics by about 22%, and the odds of having a child at mature ages for Historical Protestants are lower by 26%, once controlling for socioeconomic factors.

The findings of this study have implications regarding the effect of social institutions in fertility behavior. It is evident that the religious transformation in Chiapas has had an impact on the fertility schedule of indigenous people. However, we can not conclude that this effect leads to lower fertility levels among certain religious groups, even less that any particular religion affect fertility in a positive way. The fertility trend of Protestants in the right-side of the curve may be due to the use of contraception either to space or limit the number the children mainly after 30 years of age. This may be related to the influence of the openness of Protestant religions to contraception on fertility (Schenker, 2000) or possibly the socioeconomic gains that come with conversion (Mariz, 1994; Rostas, 1999; Turner, 1979; Robledo, 2002).

However, the reasons for the fertility behavior of Protestants during adolescence are unclear. Their higher fertility might be related to different social and economic circumstances that are not accounted for in our regression analysis. However, it seems more likely to be the result of a greater emphasis on chastity for both males and females prior to marriage, which in turn leads Protestant indigenous youth to marry earlier.

To gain additional purchase on the possible reasons for these differentials, in the full version of this paper, we will go back to several previous fertility surveys that have sufficiently large samples for Chiapas (ENAPLAF and ENADID), and examine questions related to the demand for children, and use of contraception. While these surveys do not have large enough samples to tell distinguish differentials in current fertility by ethnicity and religion, we hope they will be informative regarding the demand for, and use of contraception.

ANNEX A. TABLES

TABLE 1. Age specific fertility rates and Total Fertility Rates by ethnicity , Chiapas, MX, 1999

AGE	Indigenous women	Non-indigenous women	Total
15-19	11.02	8.51	9.18
20-24	23.93	17.3	19.04
25-29	21.11	14.95	16.55
30-34	18.55	10.24	12.2
35-39	15.02	6.12	8.37
40-44	6.87	2.85	3.71
45-49	2.19	0.99	1.28
TFR'	4.93	3.05	3.52

Note: Weighted sample.
Source: Estimations based on the 10% Mexican Census Sample, INEGI, 2000.

TABLE 2. Age specific fertility rates and Total Fertility Rates among indigenous women by religious affiliation, Chiapas, MX, 1999

AGE	Catholics	Historical Protestants	Pentecostal-Evangelicals	Biblical Non-Evangelicals	No religious affiliation
15-19	9.8	11.18	12.03	17.88	10.53
20-24	23.12	24.7	27.88	21.79	24.45
25-29	21.88	20.68	22.43	19.2	19.08
30-34	19.96	17.23	13.25	18.32	19.59
35-39	16.65	9.65	17.44	14.74	11.9
40-44	7.1	6.56	5.08	7.4	7.68
45-49	1.51	2.19	4.34	3.02	3.4
TFR'	5.00	4.61	5.12	5.12	4.83

Note: Weighted sample.
Source: Estimations based on the 10% Mexican Census Sample, INEGI, 2000.

TABLE 3. Descriptive statistics for the analysis of indigenous fertility and religion in Chiapas MX, women aged 15-39 (n=30,774)

Variable	Categories	%
Religious affiliation	Catholic	54.9
	Historical Protestant	15.6
	Pentecostal-Evangelical	10.4
	Biblical Non-Evangelical	8.1
	No religious affiliation	11.1
Age	15-19	28.1
	20-29	43.5
	30-39	28.4
Education	No instruction	38.4
	1-5 years	31.7
	6-8 years	21.3
	9 years and more	8.6
Bilingual	- - -	56.9
Floor other than dirt	- - -	29.6
Medical service commonly used	None	14.9
	IMSS, ISSSTE or Pemex	11.3
	SSA -IMSS Solidaridad	60.4
	Private or other	13.5
Rural	- - -	71.8
Recent immigrant (1995-1999)	- - -	3.8
Region of Residence	Norte	12.9
	Altos	33.2
	Selva	38.6
	Other	15.3

Note: Weighted sample.
Source: Estimations based on the 10% Mexican Census Sample, INEGI, 2000.

TABLE 4. Odds ratio of having a child in 1999 (Logistic Regression). Indigenous Women in Chiapas, MX

Independent Variables	Categories	Fertility 15-19			Fertility 20-29			Fertility 30-39		
		Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Religion	Historical	**1.29 ***	**1.27 ***	**1.33 ***	1.01	1.00	1.04	**0.74 *****	**0.72 *****	**0.74 *****
(Catholic)	Pentecostal-Ev	**1.30 ***	**1.23 +**	**1.25 +**	1.09	1.07	1.11	0.90	0.88	0.92
	Biblical Non-Ev	**1.51 *****	**1.37 ****	**1.22 +**	**0.84 ***	**0.81 ****	**0.79 ****	**0.85**	**0.84 +**	**0.78 ****
	No religion	1.08	0.99	0.98	0.99	0.97	0.96	1.01	0.99	0.97
Age (25-29/35-39)	20-24/ 30-34				1.11 *	1.13 **	1.13 **	1.36 ***	1.37 ***	1.35 ***
Years of	1-5		0.82 **	0.83 *		1.04	1.07		1.08	1.09
Schooling (0)	6-8		0.54 ***	0.58 ***		0.94	0.96		0.97	1.06
	9+		0.23 ***	0.26 ***		0.51 ***	0.58 ***		0.68 *	0.97
Bilingual	- - -		1.09	1.07		1.00	1.01		0.91	0.94
(Dirt)	Floors			0.82 *			0.78 ***			0.68 ***
Use of health	SocialSecurity			1.00			0.90			0.75 *
service (None)	SSA, IMSS-Sol			1.05			0.96			0.99
	Private, Other			1.04			0.95			0.83
Rural	- - -			1.16			1.04			1.17 *
Immigrant (1995-1999)				1.47 ***			1.16 *			1.06
Region	Altos			0.78 *			0.96			0.81 **
(Norte)	Selva			0.79 *			0.83 ***			0.83 *
	Other			1.01			1.03			0.86
N				**8757**			**13320**			**8697**
Log likelihood		-3097	-3046	-3030	-7314	-7283	-7261	-4036	-4030	-4000

***p<=.001 **p<=.01 *p<=.05 +p<=.1 Note: Unweighted sample. Reference category in parenthesis.
Source: Estimations based on the 10% Mexican Census Sample, INEGI, 2000.

BIBLIOGRAPHY:

Addai I. Does religion matter in contraceptive use among Ghanaian Women? Review of Religious Research 1999; 40(3):259-277.

Barroso-Calderón C G. La fecundidad indígena en México bis a bis la visión e los programas oficiales ¿caminos divergentes? Estudios sobre las Culturas Contemporáneas, 2004; 10(20):79-105.

Brusco E. The reformation of machismo: asceticism and masculinity among Colombian Evangelicals. In: Garrad-Burnett V, Stoll D, editors. Rethinking Protestantism in Latin America, Philadelphia: Temple University Press, 1993:143-158.

Camarena Córdova, Rosa Maria. Instituciones sociales y reproducción. Tesis presentada para la obtención del grado de Maestra en Demografía. México: El COLMEX, 1991.

Chavez-Galindo A M, Gonzalez-Mata E A, Menkes-Bancet C, Hernandez-Bringas H, Tendencias de la Fecundidad Indígena en México , 1997 y 2003. In: XXV Conference of the International Union for the Scientific Study of Population, July 2005, 27pp.

Consejo Nacional de Población. La revolución silenciosa: el descenso de la fecundidad en México, 1974-1999. In: La situación demográfica de México. México D F: CONAPO, 1999.

Consejo Nacional de Población. Fecundidad y procesos de difusión. In: La situación demográfica de México. México D F: CONAPO, 1998.

Consejo Nacional de Población. Informe de ejecución 2001-2003 del Programa Nacional de Población 2001-2006. Available: http://www.conapo.gob.mx/micros/infavance/2003.htm

Corona R. Tamaño de la población indígena mexicana. In: La población de Mexico en el nuevo siglo. México DF: CONAPO, 2001: 165-180.

Del Popolo F, Oyarce A M. Población indígena de América Latina: perfil sociodemográfico en el marco de la CIPD y de las Metas del Milenio, In: Seminario Internacional "Pueblos indígenas y afrodescendientes de America Latina y el Caribe", 27-29 abril del 2005, Santiago de Chile: CEPAL.

Dow J W. The expansion of Protestantism in Mexico: An anthropological View. Anthropol Q 2005; 78(4): 827-850.

Fernandez-Ham P. La población indígena: principales grupos etnolingüísticos. In: La situación demográfica de México. México D F: CONAPO, 1999: 115-126.

Goodson P. Protestants and Family Planning. Journal of Religion and Health 1997; 36(4): 353-366.

Gutiérrez-Sánchez J, La demografía de las regiones indígenas. In: Chiapas: una nueva visión para una nueva política. 1ª ed. México: Senado de la republica, 2000:173-219.

Instituto Nacional de Estadística, Geografía e Informática. La población hablante de lengua indígena de Chiapas. Aguascalientes: INEGI, 2000a.

Instituto Nacional de Estadística, Geografía e Informática. La población indígena en México. Aguascalientes: INEGI, 2000b.

Instituto Nacional de Estadística, Geografía e Informática. La diversidad religiosa en México. Aguascalientes: INEGI, 2000c.

Instituto Nacional de Estadística, Geografía e Informática. XII Censo de Población y Vivienda [CD-Room]. Aguascalientes: INEGI, 2000d.

Kirsh J D, Arana-Cede~no M, Informed consent for family planning for poor women in Chiapas, Mexico. The Lancet 1999, 354(July):419-420.

Laboratorio de Análisis de Información Geográfica y Estadística de El Colegio de la Frontera Sur (LAIGE-ECOSUR). Regiones económicas de Chiapas [Map]. (2007, July). Retrieved September 04, 2007. Available from: www.ecosur.mx

Mariz C. Coping with poverty: Pentecostals and Christian Base Communities in Brazil, Philadelphia: Temple University Press, 1994.

Marroquín E. Lo religioso en el conflicto de Chiapas. Espiral. Guadalajara: Universidad de Guadalajara, 1996; 3(7): 143-158.

Martínez-Velasco, G. Globalización y subdesarrollo local. Diferenciación social y migración en Chiapas. Papeles de Población 22, Toluca México: Universidad Autónoma del Estado de México, 1999.

Martínez-Velasco, G. Conflicto étnico y migraciones forzadas en Chiapas. In: Política y Cultura 23, Mexico D F: Universidad Autónoma Metropolitana, 2005:195-210.

McKinnon S, Potter J E, Garrad-Burnett V. The impact of Protestantism on Fertility Behaviors of Adolescents in Rio de Janeiro, Brazil. In: Meeting of the Population Association of America; 2006 March 30 to April 1; Los Angeles: Population Association of America.

McQuillan K, When Does Religion Influence Fertility? Population and Development Review 2004; 30(1): 25-56.

Nazar-Beutelspacher A, Zapata-Martelo E, Vazquez-Garcia V, Does contraception benefit women? Structure, agency and wellbeing in rural México, Feminist Economics 2003; 9(2-3):213-238.

Ocampo-Torres M. La obra médica Tzotzil, México: Publicaciones El Faro, enero-febrero 1994:14-17.

Ocampo-Torres M. Donde hay paramédico. Manual de Salud Comunitaria para Promotores de Salud. Iglesia Nacional Presbiteriana de Mexico. 1995 [Mimeo].

Robledo-Hernández G P. Religiosidad y estrategias de reproducción de los grupos domésticos en una comunidad indígena. Tesis de doctorado. San Cristóbal de las Casas (Chiapas, México): ECOSUR, 2002.

Rostas S A. A grass roots view of religious change amongst women in an indigenous community in Chiapas, Mexico, Bull Latin Am Res 1999; 18 (3):327-341.

Rubin J. Los determinantes socioeconómicos de la fecundidad. In: Figueroa B. (comp). La fecundidad en México. Cambios y perspectivas, Mexico: El COLMEX, 1989: 249-315.

Rus D. La crisis económica y la mujer indígena: el caso de Chamula, Chiapas. Serie Documentos de trabajo sobre cambio en el campo chiapaneco, México: Instituto de Asesoria Antropológica para la Región Maya, 1990.

Sánchez-Pérez H J, Arana-Cedeno M, Yamin A E. Pueblos excluidos, comunidades erosionadas: La situación del derecho a la salud en Chiapas, México. Estados Unidos: Physicians for Human Rights, El Colegio de la Frontera Sur, Centro de Capacitación en Ecología y Salud para Campesinos-Defensoría del Derecho a la Salud, 2006.

Schenker J G . Women's reproductive health: monotheistic religious perspectives. International Journal of Gynecology & Obstetrics 2000, 70: 77-86.

Serrano-Carreto E, Fernández-Ham P, La fecundidad de las poblaciones indígenas de México. In: Lartigue F, Quesnel A. coords. Las dinámicas de la población indígena: cuestiones y debates actuales en México. Mexico D F: CIESAS, IRD: M.A. Porrua, 2003: 397-428.

Turner P R. Religious conversion and community development. J Sci Stud Relig 1979; 18(3): 252-260.