Premarital sexual initiation and fertility among Pentecostal adolescents in Brazil

Authors:

Ana Paula A. Verona
Federal University of Minas Gerais, Brazil
Postdoctoral fellow, Department of Demography
anapaulaverona@gmail.com

Mark Regnerus
The University of Texas at Austin
Associate Professor of Sociology, Department of Sociology
regnerus@prc.utexas.edu

Abstract:

Pentecostal churches frequently disseminate conservative standards about personal habits and sexual behavior of its young adherents. They have also created unique space and promoted close relationships for adolescents to actively participate in a religious environment. This study analyses data from the 2006 Brazil PNDS to test the hypothesis that Pentecostal young women are at a lower risk of experiencing premarital sexual intercourse and childbearing during adolescence than those affiliated with the Catholic Church in Brazil. Using Cox proportional hazard models, we note that Pentecostals who attend church weekly demonstrated the most conservative sexual behavior while those who rarely attend showed the greatest risk. Even if they diminished their church attendance after initiating a sexual relationship, Pentecostals still display a lower risk of having a nonmarital birth.

Introduction

Religion is emerging as an important factor in the lives of many adolescents and youth in Brazil. In terms of their ability to attract this population, Pentecostal churches stand out, primarily since they use resources to create unique space for their young followers to actively participate in a religious environment. Youth groups, dating groups, counseling services, lectures on daily issues, and aid work in poor communities are among the activities that can be frequently observed in such churches in Brazil. Thus Pentecostal congregations appear to be successful at creating ways in which religion can influence the lives and behavior of adolescents and young people.

With the growth of Pentecostalism over the last few decades in Brazil, conservative norms related to the sexual and reproductive behavior of adolescents and unmarried youth began to play an increasingly important role in the lives of its young members (Burdick 1993). While promoting close relationships, the Pentecostal movement also disseminates clear standards and objectives—as well as punitive sanctions— especially around personal habits, family, and the sexual behavior of its young adherents (Pierucci and Prandi 2000).

Simultaneously to this growth, the percentage of Brazilian adolescent women who report never having had sexual intercourse dramatically decreased in 20 years: from 80 percent in 1986 to 45 percent in 2006. The use of contraceptives in Brazil, particularly of condoms, has increased but not sufficiently to offset the decline in virginity (Ali and Cleland 2004). Consequently, one of the proximate determinants of fertility—age at first sexual intercourse—likely plays an important role in the increasing (and more recently stabilizing) rate of adolescent fertility in Brazil[1].

[1]Unlike the majority of the developing world, estimates from the Brazil Demographic and Health Surveys (DHS) show that the age specific fertility rates for adolescents increased from 74 births per 1,000 women in 1986 to 86 in 1996. The 2006 Brazil PNDS (Pesquisa Nacional de Demografia e Saúde) suggests recent stability (83 births per 1,000 women) of adolescent fertility in Brazil.

It is well documented that earlier sexual activity can lead to negative reproductive health outcomes for adolescents and young women. In many countries, concern about unprotected sexual behavior, for instance, is rising because of increases in premarital and unintended pregnancies, unwanted childbearing, and abortion, as well as the high risks of acquiring HIV and other sexually transmitted diseases (Heilborn, Aquino and Knauth 2006; Hindin and Fatusi 2009; Bankole and Malarcher 2010). Other problematic consequences of earlier sexual initiation are frequently associated with dropping out of school and lack of social support from family and partners (Bongaarts and Cohen 1998).

On the other hand, earlier sexual experience and adolescent childbearing have been recognized in some studies as a social response to socioeconomic disadvantage, which could expose young women to environmental factors that elevate the risk of poorer health and social outcomes when compared to somewhat older mothers (Geronimus 1987). Teenage motherhood in Brazil, for instance, is increasingly concentrated among socioeconomically disadvantaged populations, especially among the least-educated women, those with lower income, and residents of urban areas (Berquó and Cavenaghi 2005).

The question we address in this paper is what association may exist between Pentecostalism and both age at first sexual intercourse as well as age at first birth in Brazil. We hypothesize that women who belong to Pentecostal churches are at a lower risk of experiencing earlier sexual intercourse and childbearing than those affiliated with the Catholic Church in Brazil[2]. Because of Pentecostalism's conservative values about marriage and sexual activity, we estimate the risk of first sex– and first birth – being premarital. In addition, we also hypothesize that greater religious commitment (measured

[2] Catholicism in Brazil has long been blamed for permitting flexibility and variety regarding its religious practices. It became an "easy religion" in Brazil, a "church very often regarded as a social necessity – a comfortable presence rather than a compelling force" (Bruneau 1982: 21). As noted by Pierucci and Prandi (2000), traditional Catholics still comprise the majority of Catholics in Brazil today. This group includes those who attend church sporadically and are not involved in renewal movements, such as the Catholics of the Christian Base Communities and the Movement of Charismatic Catholic Review.

as attendance at religious services) matters as well—that Pentecostals who are more devout than other Pentecostals may exhibit even lower risk of early first sex and fertility.

The present study uses data from the 2006 PNDS (*Pesquisa Nacional de Demografia e Saúde- Demographic and Health National Survey)*, a nationally representative survey of women aged 15-49 years that was financially supported by the Brazilian Ministry of Health. Different from the 2000 Brazilian census, the 2006 PNDS provides information about the respondent's age at first sexual intercourse, age at first birth, age at first union as well as attendance at religious services.

Nevertheless, it is important to highlight that results using the 2006 PNDS may be affected by two main limitations. First, the cross-sectional nature of the 2006 PNDS makes it impossible to document causal effects. It cannot be clear, for instance, whether or not some women may have changed their religious attitudes and behaviors (e.g., going more or less often to church, or converting from one religious affiliation to another) after having sexual intercourse or a baby. Therefore, this hypothesis, called reverse causation, suggests that causal direction may be inverse, that is, decisions about religion may be a product of the outcome under consideration (e.g., sexual behavior) and not the other way around (Regnerus and Smith 2005). However, the 2006 PNDS allows observing the potential association between religion and sexual initiation, and, at this point, there are no alternative data sets for modeling this association in Brazil.

Second, respondents may find themselves embarrassed and may lie rather than tell the truth, especially when asked about behavior associated with religious participation or sexual activity (Presser and Stinson 1998). This risk of social desirability bias remains present here, and can affect the way how respondents answer research questions, and therefore confound the results.

Pentecostalism in Brazil

The last few decades have witnessed a rapid and widespread transformation of Brazil's religious landscape (Burdick 1993; Decol 1999; Pierucci and Prandi 2000; Chesnut 2003). In this process, the expansion of Protestantism – led by Pentecostal churches – has attracted special attention. The proportion of Protestants increased from less than three percent in 1940 to 15 percent in 2000[3] (Mariano 2004). In his book about the Pentecostal boom in Brazil, Chesnut (1997) emphasized that the great majority of converts has been (very) poor people, and observed that the majority of his study's informants in Belém (state of Pará) adhered to the faith in an attempt to solve different kinds of afflictions. The 1996 ISER (Institute of Religious Studies – Rio de Janeiro, Brazil) study, the largest survey conducted among Protestants in Latin America, revealed similar results: 55 percent of Protestants in the city of Rio de Janeiro reported converting to the faith while experiencing a time of serious hardship (Fernandes et al. 1998). Sickness, together with alcohol abuse, family conflict, and economic hardships, accounted for more than one-half of these problems.

Chesnut (1997) also explained that Pentecostal Protestantism enjoyed overwhelming success in appealing to the poor based on the idea that positive life transformation is possible. Believers, for instance, cannot claim to be fully converted until they have abandoned secular, and sometimes unhealthy, pleasures. Several Pentecostal churches, for instance, strongly disapprove of alcohol consumption, drug use, smoking, premarital and nonmarital sexual relations, as well as modern hairstyles or dress. In an ethnographic study conducted in Brazil, Burdick (1993) examined some Pentecostal conservative norms and how they may influence the lives and behaviors of Brazilian youth. He argued, for example, that courting is closely regulated in Pentecostal churches, such as

[3] This growth was concomitant with the end of Catholic domination of Brazilian market share in religion. According to data from the Brazilian censuses, the percentage of Catholics in Brazil dropped from 95 percent in 1940 to 74 percent in 2000.

the Assemblies of God, where premarital sex is considered a very serious sin. According to the author, "those who surrender to temptation [premarital sex] may be severely disciplined, even excluded from communion for a time, and may suffer the withdrawal of the Holy Spirit" (Burdick 1993: 131).

Explanations for religious influence

According to social control theories of adolescent behavior, religion functions to encourage adolescents to avoid actions that they might otherwise have taken (Rohrbaugh and Jessor 1975; DeLamater 1981; Crockett et al. 1996; Smith 2003; Hardy and Raffaelli 2003; Rostosky et al. 2004; Regnerus 2003 and 2007). Such an influence of religion has been frequently seen as an inhibiting force, which may contribute to postponing, reducing or even restricting certain behaviors, including adolescent sexual activity.

Research on the effects of religious influence focuses on the idea that sacred teachings, beliefs, and values offered by religious groups and congregations may directly affect peoples' behavior. This straightforward influence is found when one or more aspects of religion have an independent effect on the outcome of interest net of other important independent influences (Regnerus 2003). Nevertheless, some studies argue that the most common way that religion affects behavior is through indirect influences, calling attention to mechanisms or pathways by which religion may help bring about a desired outcome (Regnerus and Smith 2005). The work of Smith (2003), for instance, formulates an integrated account of religion's influence in the lives of American adolescents, suggesting key factors or pathways through which religion may act. These are aggregated around dimensions, such as: *learned competences* (that comprises community and leadership skills; coping skills; and cultural capital), and *social and organizational ties* (that includes social capital; network closure; and extra-community links).

Some of these religious pathways may be more closely associated with adolescent sexual and reproductive behavior. The achievement of leadership skills and cultural capital, when helping to coordinate a religious workshop, assisting in a tutoring program, or learning to play a musical instrument, for example, represents a useful capability that can positively affect adolescents' opportunities at school and in the labor market (Regnerus 2000; Muller and Ellison 2001; Glanville, Sikkink, and Hernández 2008), increasing their confidence and life chances. Higher expectations and better opportunities may be a motivation (especially for adolescent girls) to avoid certain behaviors, including premarital sexual relationships that might be associated with early dropout from school and unplanned pregnancy.

Although there is little empirical evidence for how these mechanisms work in Brazil, Pentecostal churches in the country may be an environment for the emergence of some of the pathways suggested above. As pointed out by Mariz (1994) and Burdick (1993), unlike traditional Catholics, Pentecostals have long been recognized in Brazil for their religious knowledge. They highlight, for instance, the importance of reading the Bible and knowing its contents well. Pentecostal Protestant churches in Brazil frequently provide youth with substantial musical education through participation in choirs and choruses, and opportunities to play musical instruments for worship. The stimulus for reading, speaking, forming opinions, and playing musical instruments may encourage Pentecostals to become literate and develop skills that can be useful for other aspects in their lives. They may, for instance, find themselves as talented adolescents, and have higher educational and professional aspirations. Consequently, they may want to avoid or postpone certain sexual or reproductive outcomes, such as premarital sex or childbearing, which could reduce their chances at reaching better adult opportunities. Mariz (1994) also argued that because Pentecostal churches in Brazil very often consist of independent small groups, ordinary

people may have ample opportunity to develop leadership skills that can increase youth capacities and confidence, which can enhance their well-being and life chances.

Another potential source of influence on adolescent's sexual behavior may occur through social ties and support networks provided by religious organizations. Smith (2003) argues that religious institutions emphasize personal interactions with fellow believers of all ages and life stages, providing youth with access to adult members and encouraging exchange relations within a context governed by norms of trust, care, and mutual obligation. These networks may be an important source of helpful information, resources, and opportunities of which youth can always take advantage (Muller and Ellison 2001; Krause et al. 2001; Smith 2003). Fostering social relationships between youth, parents, friends and other adults is a way to improve youth outcomes, primarily because it creates conditions of increased support for and supervision of youth.

Pentecostals in Brazil are recognized by promoting self-help networks that are national in scope. They usually offer not only psychological and spiritual support, but also financial, with some opening their homes to people in need, trying to help others to find jobs, or even offering child help support (Burdick 1993; Chesnut 2003; Wood, Williams, and Chijiwa 2007). To some degree, these social ties may affect the use of time by young people, encouraging them to look for a (better) job or study harder at school, for instance. These connections, based in a religious environment, can also expand youth aspirations, encouraging their development and maturity, as well as restrict their free time, which may indirectly affect their sexual and reproductive behavior as well. In addition, these networks of relational ties may affect adolescents' attitudes by enabling parents and older religiously-involved people to supervise and pay closer attention to them (Smith 2003). Burdick (1993) observed that Pentecostal parents, for instance, maintain strict authority over their

daughters' relations with men in Brazil. They very often disapprove of extended courtships and marriage to non-*crentes* [4].

In sum, the recent growth of Pentecostalism in Brazil has brought attention to potential social, demographic, economic, and cultural consequences of religious conversion. Affiliation with Pentecostal churches has been popularly associated with positive attitudinal and behavioral transformations that, among other things, may change health-related outcomes, sexual and reproductive behaviors, increase cultural and social capital, provide support networks of trust and reciprocity, and enhance the economic viability of the household (Smilde 2007; Wood, Williams, and Chijiwa 2007; McKinnon, Potter, and Garrard-Burnett 2008; Potter, Amaral, and Woodbery 2009).

Among the existing social, economic, and demographic factors that may affect adolescent sexual and reproductive behavior in Brazil, religion deserves further consideration, not simply because this country has experienced tremendous change in its religious landscape during the last decades, but also because religion is both a primary socialization agent of adolescents and sexual activity is a sphere of human behavior considered high in religious applicability (Regnerus 2007). Even so, very little is known about the implications of religious involvement for adolescent sexual and reproductive behavior in Brazil. One of the few studies that have contributed to this topic was conducted by McKinnon, Potter, and Garrard-Burnett (2008). Using the 2000 Brazilian census, this article explored the relationships between Protestantism and fertility and family formation among adolescents aged from 15 to 17 living in the metropolitan region of Rio de Janeiro. According to this article, the odds of ever having had a live birth for adolescent women aged from 15 to 17 belonging to Baptist, other Mainline Protestant, Assembly of God, and

[4] *Crente* means believer, and it is a name popularly given to adepts of Protestant churches.

other Pentecostal churches is reduced by about one third when compared with Catholics. It also notes that adolescents who belong to the Assembly of God, other Pentecostal Protestant, or other mainline Protestant churches are much more likely to be married than Catholics.

Data

This article uses data from the 2006 PNDS, a nationally representative survey of women aged 15-49 years, which contains detailed information on sexual and reproductive behavior, as well as questions on religious affiliation and attendance at religious services. In the analyses that follow, we test the hypothesis that religious denominations (especially Pentecostalism) and church attendance are associated with age at first sexual intercourse and then, with age at first birth among adolescents (aged 15-19) in Brazil, after adjusting for key variables. Since the histories of these women are incomplete, the experiences of young adults aged 20-24 (women who recently completed their teen years) are also considered. Moreover, because of the confounding effects of marriage and sexual activity, this analysis estimates the risk of the first sexual intercourse (and first birth) being premarital—that is, first intercourse (or birth) occurring either at a younger age than the first union, whether formal or informal, or before the age of 20 among women who have never married (Gupta 2000). The 2006 PNDS measures the age at first sexual intercourse and age at first union in completed years. As pointed out by Gupta (2000), this practice likely leads to underestimated rates of premarital activity, because some sexual relations and births occurring within the few months preceding marriage are counted as marital events.

The 2006 PNDS classifies religious affiliation into six groups[5]: (1) Roman Catholicism, (2) Traditional Protestantism, (3) Pentecostalism, (4) Spiritism, (5) Afro-Brazilian religions, and (6) others. Taken together, approximately three per cent of the adolescents and young women reported belonging to the last three religious affiliation groups in 2006. Because these denominations may present a tremendous variety of beliefs and practices as well as represent a very small portion of the sample, they were excluded from our analysis. Finally, the religious affiliation variable also contains a "no religion" category. The final sample of this analysis includes a total of 4,617 young women between 15 and 24 years old.

Unlike the Brazilian Censuses, the PNDS collects information on attendance at religious services, which allows using a measure of religiosity as well. The 2006 PNDS classifies religious service attendance into five groups: (1) More than weekly; (2) Weekly; (3) Once to three times a month; (4) Less than monthly; and (5) Don't attend.

Because the 2006 PNDS is based on a stratified two-stage cluster design, it is necessary to specify the sampling weights and units (used in clustering). In the software STATA version 10, this is possible using the "*svyset*" command, which produces estimates of standard errors and statistical tests that are corrected for the complex design of the survey. All descriptive and statistical analyses shown here are corrected by this command and conducted using STATA version 10.

[5] One limitation here is the crude categorization of the measure of religious affiliation. Brazil's religious landscape is characterized by a large number of denominations and one could argue that a broad categorization hides important sub-denominational differences that may impact the initial sexual behavior and childbearing. In future surveys, including the PNDS and DHS, a more nuanced categorization of religious affiliation is needed.

Analytical Strategy

A substantial number of women had not experienced the events of interest (premarital sexual initiation and first birth) at the time the survey was conducted. Thus, in order to account for censoring in the estimation of exposure time, we use Cox proportional hazard models. We present our findings through two sets of three main statistical models. In the two first models of the first set, we test whether the hazard ratios of a young woman's having premarital adolescent first sexual intercourse is associated with (1) religious affiliation and (2) attendance at religious services in Brazil.

We then present our third Cox model displaying the association between the hazard ratios of having premarital adolescent sexual intercourse and religious denomination and attendance at religious services simultaneously. In an attempt to avoid multicollinearity due to the high correlation between Pentecostalism and religious service attendance (as suggested in Table 1 of this article), we created six mutually exclusive dichotomous variables representing combinations of the three religious affiliations with two different frequencies of attendance at religious service. In order to facilitate the results' interpretation of them, we re-categorized the religious services attendance variable into two groups, which are: (1) young women who attended religious services less than weekly, and (2) those who attended weekly or more.

The new six mutually exclusive dichotomous variables include: (1) Catholics who go to church weekly or more often, (2) Catholics who go less than weekly (the reference group), (3) Traditional Protestants who attend religious services weekly or more, (4) Traditional Protestants who attend them less than weekly, (5) Pentecostals who go weekly or more to church, and (6) Pentecostals who go less than weekly. The second set of models also includes the same models as in the first set; however it presents the association

between the hazard ratios of having a premarital adolescent first birth and religious denomination and attendance at religious services.

Because adolescent sexual behavior as well as religious affiliation and religious service attendance differ significantly in a number of socioeconomic, demographic, and community characteristics in Brazil, it is important to adjust our results by these factors as effectively as possible. Other independent variables used in our analysis included a dichotomous variable based on the information for two age groups: 15-19 years (the reference group) and 20-24; two groups of years of education: 0-8 years (reference), and nine years and over; a dichotomous variable based on the information for currently living in urban areas (rural is the reference) and for childhood residence (lived in a small city when she was twelve is the reference); and five categories for region of residence (Northeast is the reference).

We also attempted to assess socioeconomic status (SES) with a household variable created based on a method suggested by the Associação Brasileira de Empresa de Pesquisas (ABEP 2008). This method employs information on the education of the head of the household in addition to nine amenities within the household, which include: number of televisions, DVD, radios, bathrooms, cars, washer machines, refrigerators, freezers, and housekeepers. The 2006 PNDS household dataset provides all the variables necessary to calculate this aggregate indicator of SES. The range of this measure is 0 to 7 – with 7 being the highest level of SES – and is treated as continuous in our analyses.

Finally, we created two cluster-level aggregate variables, one for the percentage of Pentecostals within the cluster, and one for the percentage of women who do not attend religious services in the cluster. These variables may allow one to observe whether adolescents and young women who live in communities with distinct levels of religiosity are exposed to different risks of engaging in premarital first sexual relationship and birth.

That is, perhaps religious influence is more contextual than it is personal. For each cluster-level aggregate variable, two levels (high and low) of adherence to Pentecostalism and religiosity were grouped, taking into account the proportion of Pentecostals living in the cluster (less than 11 percent in the cluster is the reference group) and low attendance at religious services among women living in the cluster (less than 38 percent is the reference group). These levels were chosen based on the proportion of Pentecostals and women who rarely attend religious services (less than monthly or never) in the total population.

Results

Table 1 displays the percentage of young women (15-24) by religious affiliation and attendance at religious service in Brazil in 2006. While 63 percent of them reported being affiliated with the Catholic Church, 14 percent and 11 percent identified themselves as traditional Protestants and Pentecostals, respectively. Information on religious attendance reveals a heterogeneous pattern. While 39 percent of young women report attending religious services at least weekly, 44 percent attend less than monthly or never go. Table 1 also notes that young women from traditional Protestant and Pentecostal churches attend religious services far more frequently than girls from the Catholic Church in Brazil. A religiosity divide clearly separates Protestants from Catholics there.

Table 1 about here

Table 2 presents the distribution of young women (aged 15-24) in 2006 by selected demographic, socioeconomic, and community characteristics. The proportion of young women who had at least nine years of education (57%) is higher when compared to those who have less than nine. While 82 percent of the girls lived in urban areas in 2006, 44 percent of them reported that they had lived in big cities/capitals during their childhood. Moreover, Table 2 shows a high heterogeneous distribution of young women living in the

five Brazilian regions. As expected, the majority of them lived in the Southeast and Northeast in 2006. Finally, Table 2 displays the mean of the household SES (2.2) and the distribution of girls by the two cluster-level variables used in this study. First, it reveals that 52 percent of girls lived in clusters with more than 11 percent of Pentecostals, while 42 percent of them resided in clusters with more than 38 percent of women who rarely attended religious services.

Table 2 about here

Figure 1a displays the cumulative survival distribution of the transition to premarital sexual initiation by age at first sexual intercourse for the three main religious groups in Brazil and for those young women who identified themselves as having no religion. The graph reveals differences in the probability that young women will remain virgins during their adolescence at a given age between Catholics and Protestants (including Pentecostals). Catholics tend to initiate their premarital sexual life before their counterparts. On the other hand, they report having their first sexual experience later then those who report no religion, which is the group who start their sexual life the earliest. Figure 1b presents the cumulative survival functions by the five levels of attendance at religious services. At any age, those who attend religious services at least weekly display a lower probability of having had premarital sexual intercourse than those who attend religious service less frequently. We observe a similar pattern for age at first birth (Figures 2a and 2b), but as expected, the probability that first birth has not yet occurred is heavily affected by censoring data.

Figures 1 and 2 about here

In Table 3, model 1 reveals that relative to the Catholic Church, belonging to Pentecostal congregations is associated with delaying first sex during adolescence, even when controlling for demographic, socioeconomic, and contextual factors. Table 3 also

notes that attendance at religious services is inversely associated with the hazard ratio of initiating premarital sexual activity (model 2). The more young women attend religious services, the lower their risk of having had premarital sexual intercourse during adolescence, all else being equal.

Table 3 about here

In addition, our subsequent model (Model 3) suggests, at least, two main findings concerning the association between premarital sexual initiation during adolescence and the variables representing combinations between religious affiliation and attendance at religious service. First, Pentecostals with high attendance were at a statistically significant lower risk of engaging in premarital sexual intercourse during adolescence (HR=0.53; $p<0.01$) when compared to Catholics with low attendance. Even when compared to Catholics with high attendance, Pentecostals who go to church at least weekly are less likely to engaging in premarital adolescent sexual intercourse (HR=0.62; $p<0.01$; results not shown). These results may indicate a strong association between membership in a Pentecostal church and the delaying of premarital sexual initiation, but also the possible presence of social desirability bias.

Second, model 3 indicates that in 2006 Pentecostals with low attendance presented a substantial higher risk of having premarital first sex (HR=1.71; $p<0.01$) than Catholics who attended religious services on the same basis. Such a finding was unexpected since research that has been conducted has suggested that Pentecostal Protestant churches may be most effective at helping adolescents to avoid childbearing (McKinnon, Potter, and Garrard-Burnett 2008). One explanation for such a finding would be the possibility of reverse causation. According to it, some girls and young women no longer attend church regularly *because* of they have had premarital sexual intercourse, creating an illusory association

between virginity and people who do not self-select out of religion (Regnerus and Smith 2005). This hypothesis concerns why some people leave religion.

The second set of models in Table 3 presents the hazard ratio of having a premarital birth during adolescence. Model 4 reveals that young women affiliated with Pentecostal churches were substantially less likely to report having a baby born out of wedlock during their adolescence than were Catholics (HR=0.37; $p<0.05$). Such a finding suggests that social desirability bias does not likely play a pivotal role in the hazard ratio for Pentecostal girls in model 1.

Unlike the strong association between attendance at religious services and premarital sexual initiation observed in model 2, results from model 5 suggests that attendance at religious services is inversely and statistically associated with a premarital birth during adolescence only if young women attend church more than weekly. Moreover, the variables representing combinations between religious affiliation and attendance at religious service in model 6 supports the idea that attendance among Pentecostals per se is not associated with a premarital birth, since young women affiliated with these congregations are less likely to report having a birth out of wedlock than Catholics, regardless of their attendance at religious services. Therefore, whether or not they stopped attending church because they initiated a sexual relationship before marriage, they still display a lower risk of having a nonmarital birth when compared with Catholics.

Not surprisingly, education has a statistically significant association with premarital adolescent sexual initiation and first birth in Brazil. Young women with at least nine years of education were at a significantly lower risk of engaging in any of these events than those with less than nine years of schooling, all else being equal. Urban residence was associated with a higher risk of premarital sexual debut and first birth during adolescence than were rural residences (although the tests were not statistically significant when estimating the

association with premarital first birth). Similar results can be noted for childhood place of residence. Young women who spent their earliest years in an urban environment (who lived in a big city or capitol) were at a higher risk of engaging in premarital sexual activity during adolescence than those whose early environment was rural areas or small cities (the same was not observed when estimating the hazard ratio of premarital first birth during adolescence).

Moreover, the hazard ratios for regions of residence show that girls who lived either in the North, South, Southeast, or Center-west of Brazil in 2006 were at a higher risk of premarital sexual initiation than those living in the Northeast. In addition, residence in a household of higher SES is associated with a lower risk of adolescent premarital sexual initiation and first birth. Finally, the associations between the cluster-level variables –both for girls living in clusters with a high percentage of Pentecostals and women who rarely go to church– and the risk of engaging in premarital sexual intercourse and first birth during adolescence were not statistically significant.

Conclusion

As mentioned earlier in this article, most studies about Pentecostalism emphasize its pietism and conservative values. Among other things, Pentecostal practical theology formally forbids premarital sexual relations (and thus nonmarital births) (Burdick 1993; Chesnut 2003; McKinnon, Potter, and Garrard-Burnett 2008). Different authors emphasize that this regimen is sustained by social sanctions within closed communities (Mariz 1994). Moreover, Pentecostal churches in Brazil have offered different resources to create a space for adolescents and young followers to actively participate in a religious environment, which may increase their exposure to types of *indirect* influence of religion, as outlined by Smith (2003).

Our findings reveal that young women who belonged to Pentecostal churches were at a lower risk of engaging in adolescent premarital first sexual intercourse and birth than those who belonged to the Catholic Church. In addition, the risk of premarital sexual initiation during adolescence was also lower among girls who attended religious services regularly as compared to those who never participated, even after controlling for demographic, socioeconomic and community variables. Membership in Protestant and Pentecostal churches, as well as greater attendance at groups and church services, appears to facilitate indirect effects of religion on sex-related outcomes of adolescents and youth. In part, Pentecostal churches may be more effective at convincing adolescent women to avoid or postpone premarital sexual intercourse precisely because they encourage girls to attend religious services regularly.

Another important finding was the difference between Pentecostal youth who attend church on a weekly basis and those who rarely attend. The former group demonstrated the most conservative sexual behavior, while the latter showed the greatest risk. These results indicate the importance of considering attendance in religious groups and services when studying the association between religion and sexual initiation in Brazil. Adolescents with greater religious commitment, even inside the same religious congregation, may be far more apt to reproduce religious values and teachings in their actions. Presuming that attendance at religious services is one of many measures of religious commitment, it appears critical to differentiate among adolescents within the same religious group.

On the other hand, with respect to the association between Pentecostalism and age at first premarital birth during adolescence, attendance at religious services does not seem to play a crucial role. Regardless of their frequency at religious services, Pentecostal young women were at a lower risk of having an out-of-wedlock baby during adolescence in Brazil in 2006, when compared with Catholics.

The results from our models, however, must be interpreted with some caution. It is important to highlight that other factors may be at work in the apparent association between religion and premarital adolescent sexual and reproductive behavior. It is possible, for instance, that Pentecostals—for whom premarital sex is a more serious violation of norms than for most other Christian groups— and girls who regularly attend their church each display greater social desirability bias in responding to both sex and religiosity questions. If so, the hazard ratios for the religious affiliation and attendance variables reported here may be overestimated. However, should this bias exist, it would not likely account for the entire difference observed among Pentecostal and Catholic girls (as well as among those who attend regularly the church and those who rarely attend).

Furthermore, previous research has provided evidence to support the idea that Pentecostal young women who transgress the virginity norm might be inclined or motivated to leave their congregation (Mariz 1994). Therefore, it is important to repeat that because this work uses cross-sectional data, the direction of the causality may be reversed, that is, decisions on premarital sexual behavior may be prompting decisions about religious involvement – such as attendance at religious services – and not the other way around. Even so, such results still suggest a significant association between Pentecostalism and premarital adolescent sexual and reproductive behavior in Brazil.

Tables and Figures

Table 1- Weighted percentage of religious affiliation by religious attendance among young women (15-24). Brazil, 2006

Religious Affiliation*	Religious Attendance					Total
	Weekly or more	Weekly	Less than weekly	Less than monthly	Never	
Catholic	8	23	21	30	18	63
Traditional Protestant	44	28	11	14	3	14
Pentecostal	55	23	13	8	1	11
No religions	2	4	4	20	70	12
Total	18	21	17	24	20	4,617

Source: The 2006 Brazil PNDS.

*p-value <0.001

Table 2 - Weighted percentage of young women (15-24) by selected characteristics. Brazil, 2006

Variables	2006
Age	
15-19	49
20-24	51
Years of Education	
0-8	43
9 or over	57
Residence	
Rural	18
Urban	82
Residence at childhood	
Small City	57
Big City/Capital	44
Regions	
Northeast	29
North	9
Southeast	42
South	13
Middle	7
Household Socioeconomic Index	
Mean	2.2
Cluster-level aggregate:> 11% of Pentecostals	
Low	48
High (more than 11% within the cluster)	52
Cluster-level aggregate:> 38% of low attendance	
Low	58
High (more than 38% within the cluster)	42
(N)	4,617

Source: The 2006 Brazil PNDS.

Table 3 - Hazard ratios from the Cox proportional models showing the risk of young women having premarital first intercourse and first baby during adolescence. Brazil, 2006

Variables	Hazard ratios of premarital first sexual intercourse			Hazard ratios of premarital first baby		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age						
15-19	1.00	1.00	1.00	1.00	1.00	1.00
20-24	1.19*	1.15	1.16	1.51	1.47	1.51
Religious Affiliation						
Catholic	1.00			1.00		
Pentecostal	0.77*			0.37*		
Traditional Protestant	0.79			0.78		
No Religion	1.20			1.48		
Religious Attendance						
Never		1.00			1.00	
Less than monthly		0.84			0.74	
Less than weekly		0.72*			0.84	
Weekly		0.64**			0.53	
Weekly or more		0.56**			0.38**	
Religious Affiliation by Attendance						
Catholics with low attendance			1.00			1.00
Catholics with high attendance			0.85			0.60
Pentecostals with low attendance			1.71**			0.24*
Pentecostals with high attendance			0.53**			0.36*
Traditional Protestants with low attendance			0.74			0.74
Traditional Protestants with high attendance			0.76			0.67
No Religion			1.14			1.32
Years of Education						
0-8	1.00	1.00	1.00	1.00	1.00	1.00
9 or over	0.69**	0.69**	0.70**	0.50**	0.50**	0.51**
Residence						
Rural	1.00	1.00	1.00	1.00	1.00	1.00
Urban	1.28*	1.30*	1.32*	1.58	1.63	1.63
Residence at childhood						
Small City	1.00	1.00	1.00	1.00	1.00	1.00
Big City/Capital	1.24*	1.22*	1.25**	0.96	0.97	0.94
Regions						
Northeast	1.00	1.00	1.00	1.00	1.00	1.00
North	1.81**	1.86**	1.86**	1.67	1.72	1.76*
Southeast	1.56**	1.57**	1.56**	1.45	1.42	1.48
South	1.77**	1.77**	1.78**	1.55	1.47	1.57
Center-west	1.49*	1.51**	1.49**	1.68	1.73	1.73
Household Socioeconomic Index						
Mean	0.93*	0.93*	0.93*	0.62**	0.63**	0.62**
Cluster-level aggregate:> 11% of Pentecostals						
Low	1.00	1.00	1.00	1.00	1.00	1.00
High (more than 11% within the cluster)	1.08	1.05	1.06	1.30	1.21	1.27
Cluster-level aggregate:> 38% of low attendance						
Low	1.00	1.00	1.00	1.00	1.00	1.00
High (more than 38% within the cluster)	1.11	1.03	1.08	1.19	1.04	1.12
(N)	4,617					

Source: The 2006 Brazil PNDS. *p<0.05 **p<0.01

Figure 1 - Survival distribution of premarital first sexual initiation, by religious affiliation and attendance at religious services, Brazil, 2006

Figure 1a

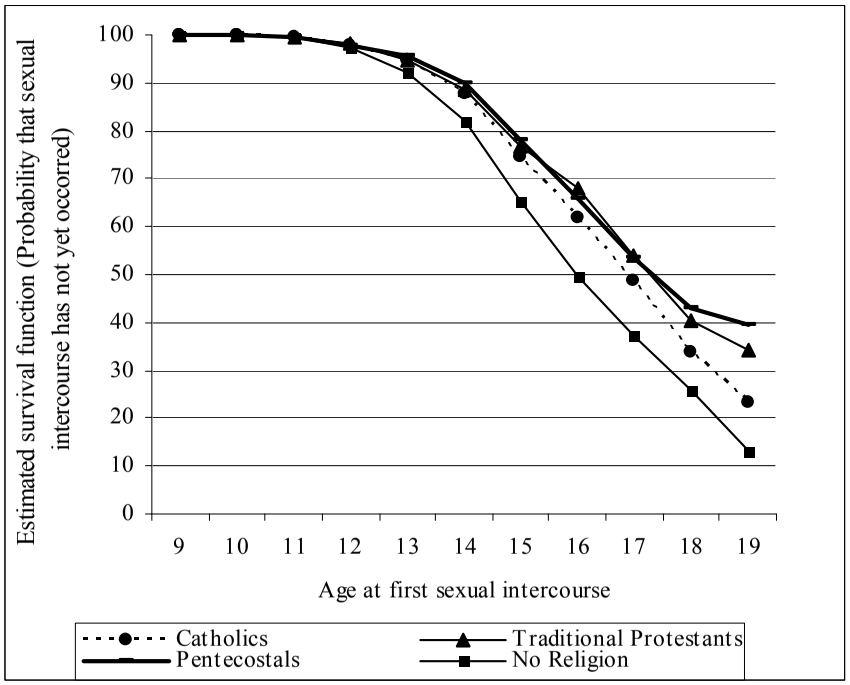
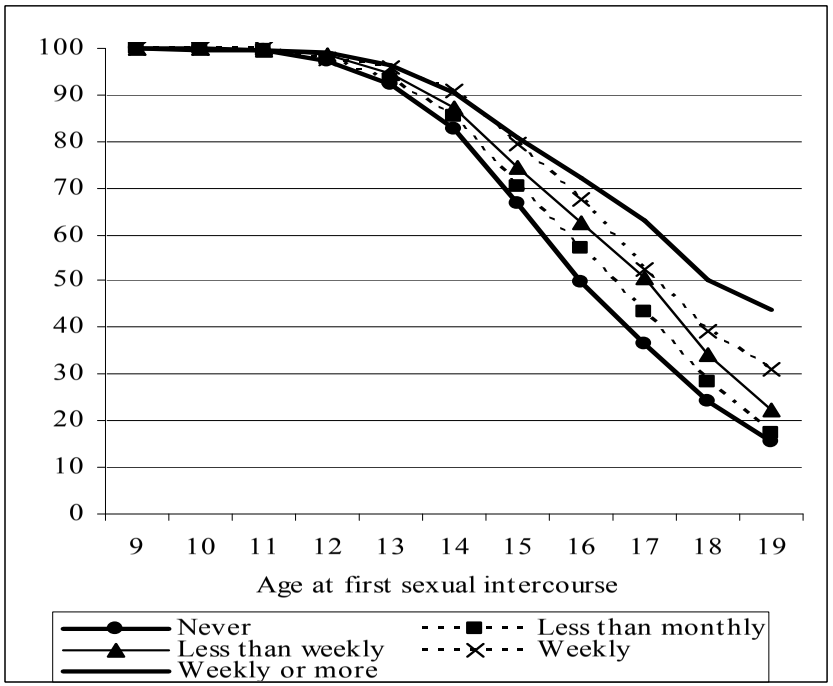
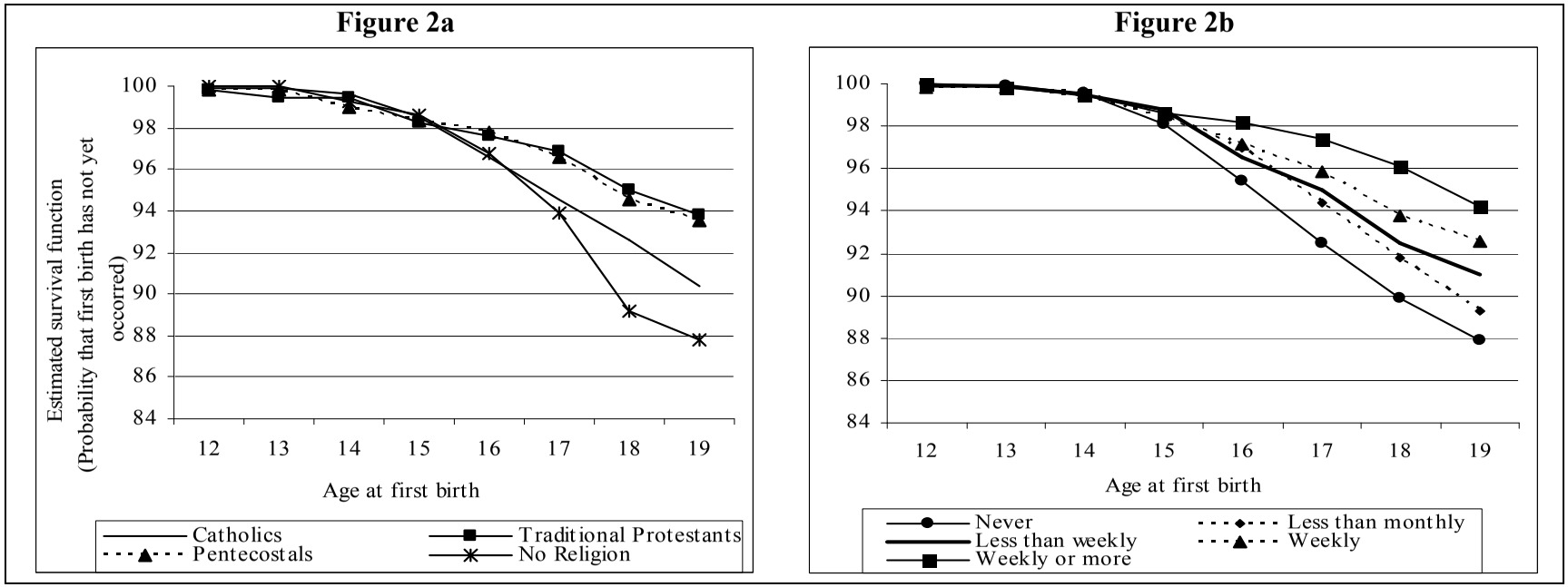


Figure 1b



Source: The 2006 Brazil PNDS

Figure 2 - Survival distribution of premarital first birth, by religious affiliation and attendance at religious services, Brazil, 2006



Source: The 2006 Brazil PNDS

References

Associação Brasileira de Empresa de Pesquisas (ABEP). 2008. Critério Brasil Mede o Poder Aquisitivo do Consumidor [Criteria for measuring consumer acquisition power in Brazil]. Unpublished report.

Ali, M. M., and J. Cleland. 2004. "Sexual and reproductive behaviour among single women aged 15–24 in eight Latin American countries: a comparative analysis" *Social Science and Medicine* 60: 1175-1185

Bankole A. and Malarcher S. 2010. Removing Barriers to Adolescents' Access to Contraceptive Information and Services**.** *Studies in Family Planning* 41(2): 117–124.

Berquó, E.S., S.M. Cavenaghi. 2005. Increasing adolescent and youth fertility in Brazil: a new trend or a one-time event? Paper presented at the Annual Meeting of the Population Association of America, Philadelphia, Pennsylvania, March 30 to April 2, 2005.

Bongaarts, J., B. Cohen. 1998. Introduction and overview. *Studies in Family Planning*, 29 (2): 99-105.

Bruneau, T.C. 1982. *The church in Brazil - the politics of religion.* Austin, TX: University of Texas Press.

Burdick, J. 1993. *Looking for god in Brazil*. Berkeley: University of California Press.

Chesnut, R.A. 1997. *Born again in Brazil - the Pentecostal boom and the pathogens of poverty.* New Brunswick, NJ: Rutgers University Press.

Chesnut, R.A. 2003. *Competitive spirits - Latin America's new religious economy.* New York: Oxford University Press.

Crockett, L. J., and C.R. Bingham, J. S. Chopak, and J. R Vicary. 1996. "Timing of first sexual intercourse: The role of social control, social learning, and problem behavior." *Journal of Youth and Adolescence*, 25: 89–111.

Decol, R.D. 1999. Mudança religiosa no Brasil: uma visão demográfica. [Religious change in Brazil: an demographic view] *Revista Brasileira de Estudos de População*, 16 (1/2): 121-137.

DeLamater, J. 1981. "The social control of sexuality" *Annual Review of Sociology* 7: 263-290.

Fernandes, R.C., P. Sanchis, O. G. Velho, L.P. Carneiro, C. Mariz, C. Mafra. 1998. *Novo nascimento - Os evangélicos em casa, na igreja e na política.* [Born again – the evangelicals at home, in the church and politics] Rio de Janeiro: Mauad.

Geronimus, A.T. 1987. "On Teenage Childbearing and Neonatal Mortality in the United States". *Population and Development Review* 13: 245-280.

Glanville, J., D. Sikkink, E. Hernández. 2008. Religious involvement and educational outcomes: the role of social capital and extracurricular participation. *The Sociological Quarterly*, 49: 105-137.

Gupta, N. 2000. Sexual initiation and contraceptive use among adolescent women in Northeast Brazil. *Studies in Family Planning*, 31 (3): 228-238.

Hardy, S. A., and M. Raffelli. 2003. "Adolescent religiosity and sexuality: an investigation of reciprocal influences". *Journal of Adolescence*, 26: 731-739

Heilborn, M.A., E.M. Aquino, and D. R. Knauth. 2006. "Youth, sexuality and reproduction". *Cadernos de Saúde Pública* 22: 1362-1363.

Hindin M. J., and A. O. Fatusi. 2009. "Adolescent sexual and reproductive health in developing countries: an overview of trends and interventions" *International Perspectives on Sexual and Reproductive Health* 35(2): 58-62.

Krause, N. et al. 2001. Church-based social support and religious coping. *Journal of Scientific Study of Religion*. 40(4): 637-656.

Mariano, R. 2004. Expansão pentecostal no Brasil: o caso da Igreja Universal. [Pentecostal expansion in Brazil: the case of the Universal Church of the Kingdom], *Estudos Avançados* 18 (52): 121-138.

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

McKinnon, S., J. Potter, V. Garrard-Burnett .2008. Adolescent fertility and religion in Rio de Janeiro, Brazil in the year 2000: the role of Protestantism. *Population Studies*, 62 (3): 289-303.

Muller C., and C. Ellison. 2001. "Religious involvement, social capital, and adolescents' academic progress: evidence from the nation education longitudinal study of 1988". *Sociological focus* 34 (2):155 - 183.

Pierucci, A.F.O., R. Prandi. 2000. Religious diversity in Brazil: Numbers and perspectives in a sociological evaluation. *International Sociology*, 15: 629-639.

Potter, J., E. Amaral, and R. Woodbery. 2009. The Growth of Protestantism in Brazil and its Impact on Income, 1970-2000. In: Meetings of the Association for the Study of Religion, Economics, and Culture (ASREC), 2009, Washington, DC.

Presser, S., L. Stinson. 1998. Data collection mode and social desirability bias in self-reported religious attendance. *American Sociological Review*, 63 (1):137- 145.

Regnerus, M.D. 2000. Shaping schooling success: religious socialization and educational outcomes in metropolitan public schools. *Journal for the Scientific Study of Religion*, 39 (3): 363- 370.

Regnerus, M.D. 2003. Religion and positive adolescent outcomes: a review of research and theory. *Review of Religious Research*, 44 (4): 394-413.

Regnerus, M..D. 2007. *Forbidden fruit - Sex and religion in the lives of American teenagers.* New York: Oxford University Press.

Regnerus, M.D., C. Smith. 2005. "Selection effects in studies of religion influence". *Review of Religious Research*, 47 (1): 23-50.

Rohrbaugh, J., and R. Jessor. 1975. "Religiosity in youth: A personal control against deviant behavior". *Journal of Personality*, 43: 136-155.

Rostosky, S. S., B. L. Wilcox, M. L. Wright, and B. A. Randall. 2004. "The impact of religiosity on adolescent sexual behavior: A review of the evidence". *Journal of Adolescent Research* 19(6), 677-697.

Smilde, D. 2007. Relational Analysis of religious conversion and social change: Networks and publics in Latin American Evangelicalism. In *Conversion of a continent: contemporary religious change in Latin America.* P. 93-111. Edited by Timothy J. Steigenga and Edward L. Cleary. Rutgers University Press.

Smith, C. 2003. Theorizing religious effects among American adolescents. *Journal for the Scientific Study of Religion*, 42 (1): 17-30.

Wood C., P. Williams, and K. Chijiwa .2007. “Protestantism and child mortality in Northeast Brazil, 2000”. *Journal for the Scientific Study of Religion* 46(3): 405 – 416.