

REPORT ON WINGS COMALAPA FERTILITY PROJECT, 2007-2008

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Brief Introduction

In spring 2007 Meira Neggaz, executive director of Women's International Network for Guatemala Solutions (WINGS) and Brad Dearden, associate professor of Geography at the University of Maine at Farmington (UMF), began the initial planning of a baseline survey to assess unmet family planning needs in the predominantly Cakchiquel Maya town of Comalapa, situated in the western highlands region of Guatemala. Specifically, the survey was designed to assess fertility patterns and sexual activity with respect to respondents' awareness, prevalence and attitudes concerning family planning methods. Survey design and interviewer training was undertaken in summer of 2007; several individuals from WINGS and UMF were integrally involved in these processes (individual participants are listed separately at the end of this report). Interviews were conducted in fall 2007, and results were analyzed and compiled in late 2007 through mid-2008.

Selection of Sample Households

The survey targeted males and females aged 15-49 in the urban area of Comalapa which, as of the 2002 census, represented 8,245 individuals. The number of urban residents in Comalapa aged 15-49 in 2007 – the target population – was estimated at 9,792. This estimate uses the 2002 census (8,245) as a base and adjusts upward according to fertility trends during the 2002-2007 period. In total, 425 surveys were conducted in 420 households, rendering a 4.3% sample of the target population. Interviewers were able to fully complete 410 of the 425 surveys (96.5%) and the response rate for any given question was sufficient to avoid biasing the outcomes. This conforms to what is considered an appropriate sample size in survey research. For continuous data, Bartlett et al. (2001) conclude that a well-chosen

sample size of 119 for a population of 10,000 yields an error margin of $\pm 3\%$. For categorical data, a sample of 370 per 10,000 yields an acceptable error margin of $\pm 5\%$ (Bartlett et al., 2001). This survey contains both continuous and categorical data, and exceeds the thresholds for sample size considered appropriate for each type of information.

The sample was selected in such a way as to be geographically representative of the population. Random-geographic samples select participants randomly from across the study area. This criteria is normally met by a random number generator that is applied to a coordinate system (e.g., latitude, longitude) that references the location of households for inclusion. Rogerson (2006), however, asserts studies have shown that a random-geographic sample is not always desirable for research involving human subjects. A randomly-selected geographic sample typically exhibits some geographic dispersion between households for parts of the study area, and contains clusters of households in proximity in other areas. In areas where sample dispersion occurs, these areas may be unrepresented or under-represented in the study. Where sample clustering occurs, it is often the case that people of common backgrounds or that are likeminded often congregate in certain neighborhoods and therefore a random-geographic sample tends to overstate similarities in that population.

This survey therefore adopted a systematic-random approach in an attempt to account for potential shortfalls of the random-geographic technique. The systematic-random approach simply divides the study area into sub-areas and within each sub-area (systematic) randomly selects a number of households for inclusion. This ensures a more geographically extensive sample selection across the entire study area, but maintains the element of random inclusion. In this survey a grid of roughly equal-sized cells was draped over a satellite image of urban Comalapa, where household rooftops were visible in the image. Sample households were

then selected randomly from each cell (town area). The recognized shortcoming of this method is that some households have larger roofs than others, and are thus more likely to be selected in the sample. The stipulation of equal-sized grid cells was also relaxed slightly, to ensure that streets remained within a single satellite image so that interviewers could easily locate the sample households. We also attempted to maintain consistency in the proportion of sample households to total households between areas of Comalapa (i.e., fewer households in an area warranted fewer sample households from that area and vice versa).

Profile of Respondents

This section of the report identifies respondents' characteristics as a context for understanding outcomes documented in the next section, namely those that address matters pertaining to sexual practices and fertility, and the unmet need for family planning and contraception. Sixty-nine percent (69%) of the 425 respondents were female and 31% male. This aspect of the sample is not entirely reflective of the population at large, such that females are somewhat over-represented in the survey and males are under-represented (see Figure 1). The time of day that interviews were conducted may have played a role in this outcome (i.e., perhaps a high proportion of interviews were conducted during daytime hours when men – who work outside the home with much more frequency than women – tend to be at work). Hence, this report provides many outcomes by gender to explicitly account for any gender-specific bias that might arise in the aggregate results.

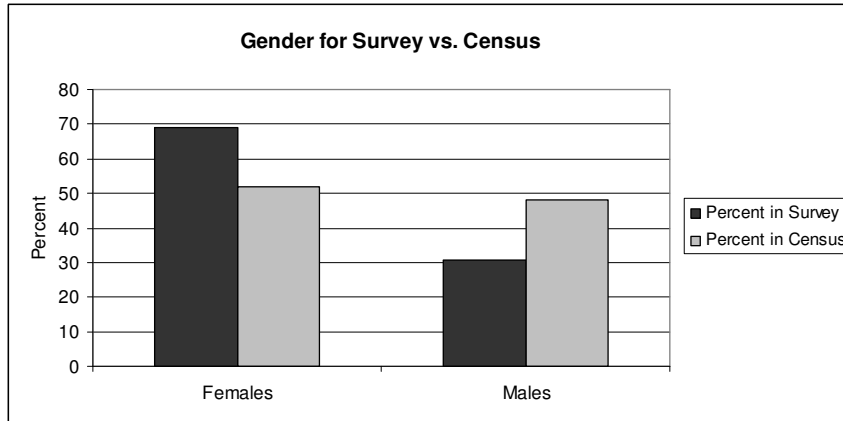


Figure 1. Gender for survey respondents and for 2002 census.

The ethnic composition of survey respondents was highly indicative of the Comalapa population at large, according to the 2002 census (see Figure 2). Practically all respondents identified themselves as Cakchiquel. This leaves scant reason in this report to differentiate responses to individual questions by ethnicity. Moreover, the 2% of survey participants that are Ladino/Ladina are too few (8 respondents) and therefore unreliable in terms of suggesting characteristics reflective of Comalapa's Ladino/Ladina population at large.

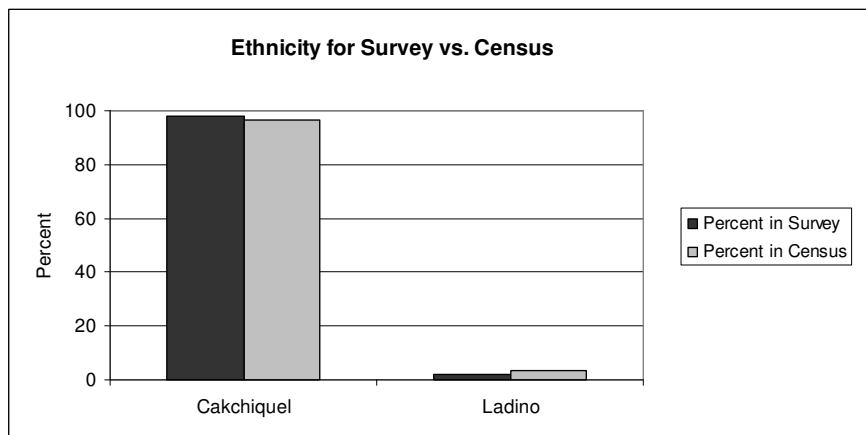


Figure 2. Ethnicity for survey respondents and for 2002 census.

Respondents reported their age by five-year age groupings, from 15-19 through 45-49 (Figure 3). There were more respondents aged 15-19 than for any other age group, followed by those aged 20-24. There were nearly equal numbers of respondents in the remaining age groups (25-49), with the exception of lower numbers for the 40-44 group. Though the largest proportion of individuals in the survey are aged 15-19, this is not out of step with their proportion in the census. In fact, as a percentage of their numbers in the census, the survey under-represents this age group by about 2%. (See Appendix, p. 126 for corresponding charts; age groups from the survey were projected backward five years to match their ages to the 2002 census). Other groups in the survey sample are well represented compared to their actual populations (Appendix, p. 126). Females aged 40-44 are the most under-represented group with 6.5% in the sample and 10% of the population, and females aged 45-49 are the most over-represented with 13.9% in the sample and 9.3% of the population. It is expected that none of these differences in percentages of survey respondents versus percentages in the census has an undue effect on outcomes: the most under- and over-represented groups are of a similar demographic, namely females in their early and late forties, respectively.

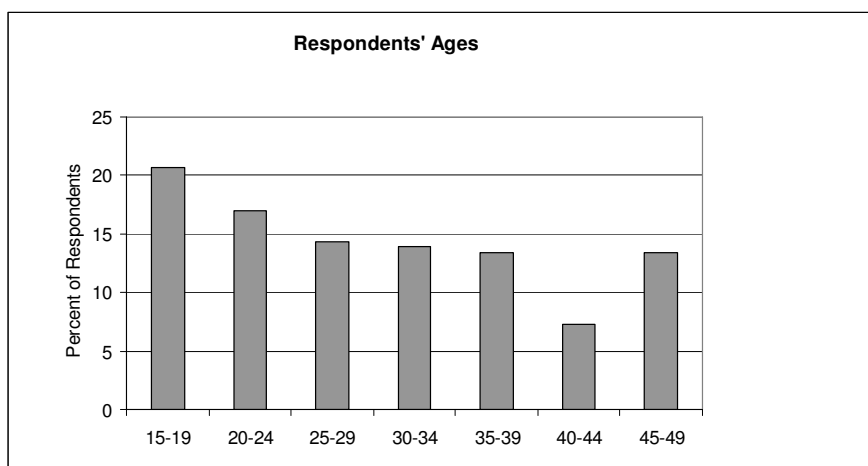


Figure 3. Respondents by age group.

Half of survey respondents are married, yet many (over 40%) are single (Figure 4).

Civil status varied considerably by age (Figure 5). Most survey respondents aged 15-24 were single, particularly in the 15-19 group where over 96% report being single. Most over age 25 are married. The proportion of respondents that are either 'in union', 'divorced', 'separated', or 'widowed/widower' are insufficient (3% or under; see Appendix, p. 3 for table) to warrant distinguishing outcomes by civil status other than for 'single' or 'married'.

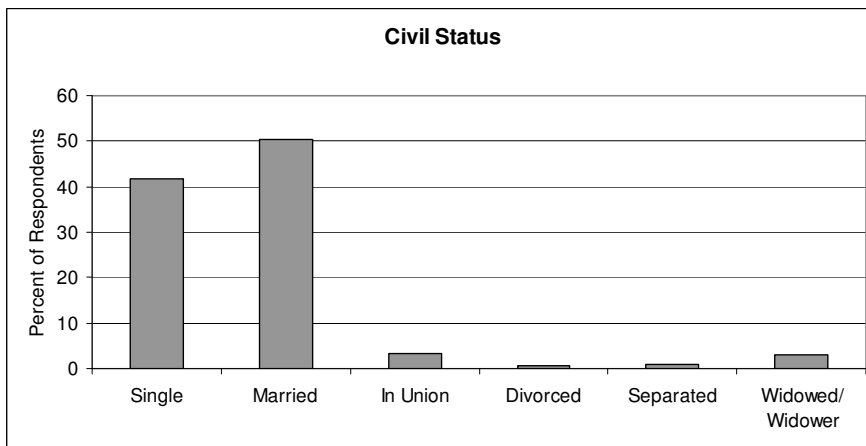


Figure 4. Respondents by civil status.

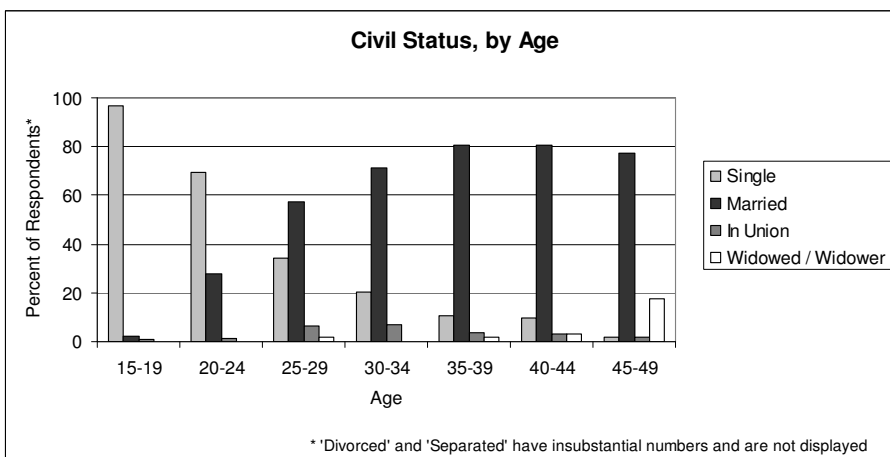


Figure 5. Civil status, by age.

Spanish literacy is high among respondents. Better than 98% can speak Spanish and over 94% report a good ability to read and write Spanish (Appendix, p. 15 for table). There are too few that are not functionally literate to attain any degree of confidence in their survey results where such results are based on literacy levels.

The level of education among respondents varies considerably, and outcomes indicate that education is an important aspect of fertility patterns and contraceptive awareness and prevalence (see the *Survey Results* section later in this report). Ninety-four percent (94%) have completed at least a primary education (Figure 6, with corresponding table in the Appendix, p. 12). Yet the highest proportion (38%) have completed only a primary education. Education levels decline thereafter: 27% completed middle school, 25% finished secondary/high school, and 3.5% have completed a university education. (The percentage of those completing a university education climbs to 4.5% when those aged 15-19 are excluded. The secondary school figure remains unchanged, however, as 25% of the 15-19 group report completion of this education. Misinterpretation of this question by respondents may have occurred, such that some of the respondents aged 15-19 could have reported 'secondary/high school' while they are at that level of education with plans to complete it, even though they have not yet graduated).

There is also some disparity in education levels between genders. More females list a primary education as their highest level attained, while more males versus females have achieved a secondary education or university degree (Figure 7; Appendix, p. 13 for table).

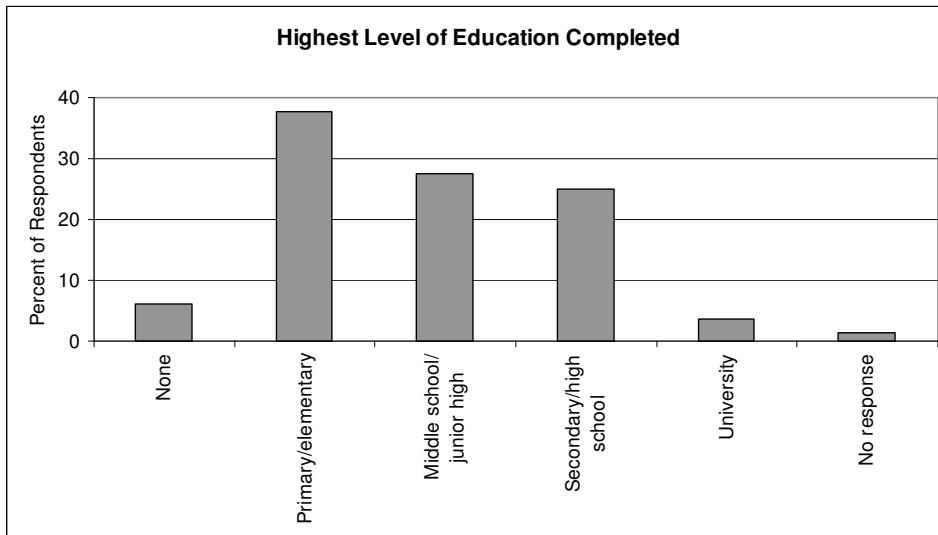


Figure 6. Respondents by education completed.

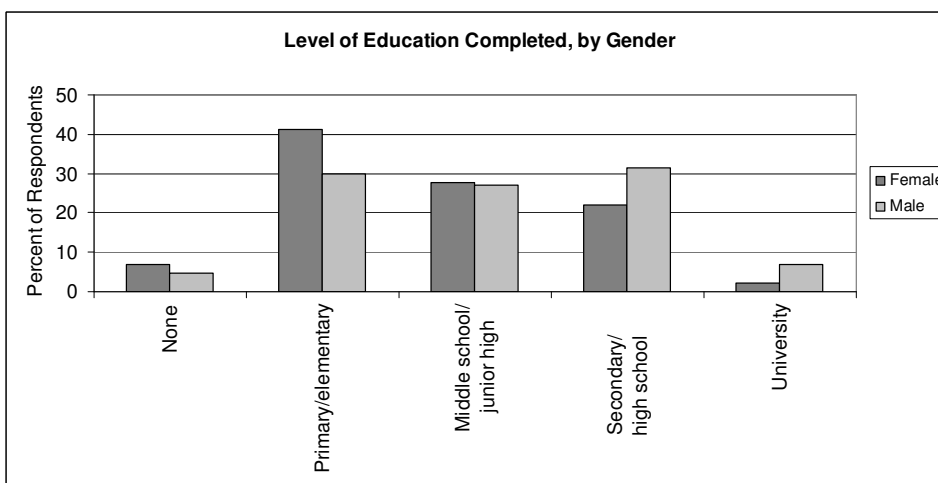


Figure 7. Education completed, by gender.

Nearly two-thirds of respondents (64%) identify themselves as Catholic, and approximately another third (32%) claim an Evangelical denomination. Less than 2% espouse a traditional form of worship, and 2.5% report no religion. A syncretism of Catholicism and traditional beliefs is practiced among many indigenous inhabitants of Guatemala, but this survey did not explore nor capture that phenomenon.

The survey also assessed both male and female occupations in terms of the type of occupation or work, the occupation status (i.e., permanent or temporary) and the workplace location (outside the home or within it). Nearly 80% of males are employed in one of three job classes: construction and general labor, agriculture, or retail and services (see Figure 8 and Appendix, p. 6). The construction and general labor class of occupations in this survey mainly consist of those that work as ‘day laborers’ (a term supplied by respondents themselves), bricklayers, or in construction/carpentry. The retail and services class is more varied, and includes those that identified themselves as merchants, store clerks, jewelers, fireman, policeman, painters, tailors, etc. Seventy percent (70%) of males report that their employment is permanent, with fewer than 30% claiming their work is temporary or seasonal; less than 2% of male respondents do not have an occupation (Appendix, p. 7). Finally, over 80% of men work outside the home (Appendix, p. 8).

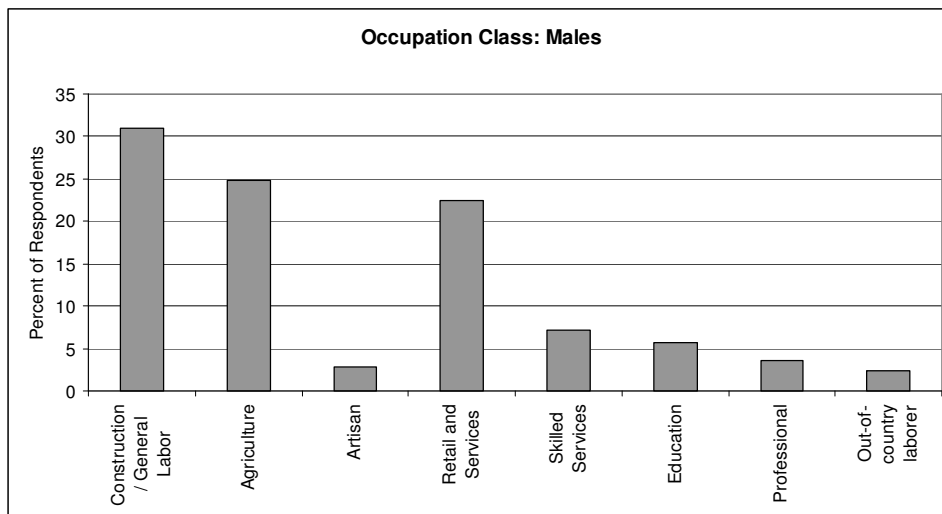


Figure 8. Male respondents by occupation class.

Female respondents differ in their employment characteristics from their male counterparts in three respects. First, a much higher proportion of women (nearly 30%) don't have an occupation. However, women that are employed – like men, though in lower proportions than men – are generally employed on a permanent basis (43%) rather than temporarily or seasonally (29%) (see table in Appendix, p. 10). Second, whereas men typically work outside the home, women work most often within their homes (73%, compared to 27% of women whose work takes them outside the home; see Appendix, p. 11). Third, women primarily work as weavers (62%), though slightly over a quarter of the women report being employed in retail and services (see Figure 9; table in Appendix, p. 9). Most females in the retail and services class are occupied as merchants, store clerks, or food vendors.

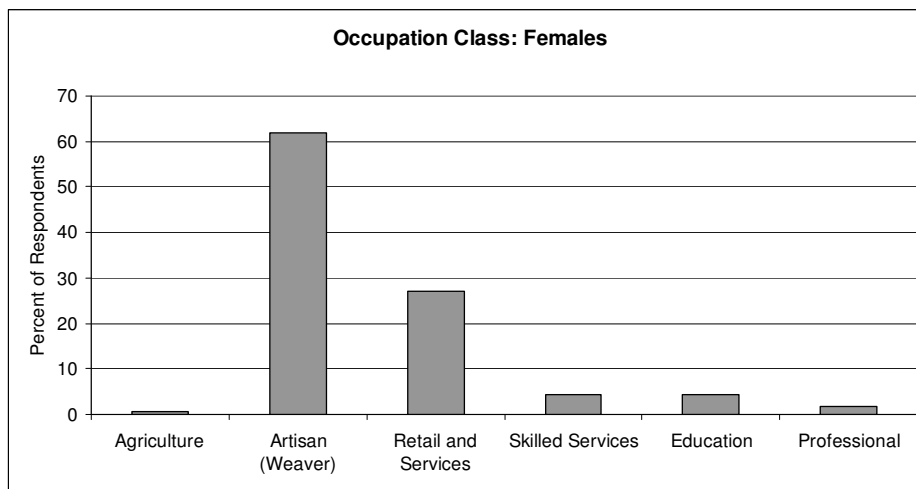


Figure 9. Female respondents by occupation class.

This survey utilized household amenities as a proxy for respondents' economic status. In populations where many are employed in agriculture, as general laborers, or work from their homes, income and wages tend to be less common (i.e, farming for family sustenance or some labor exchanged for in-kind services), less frequent, and not as readily quantifiable. The

practice of replacing income with household amenities conforms to recent studies of fertility and contraception among Maya groups in Guatemala, which have adopted a similar approach (Bertrand et al. 1999; Bertrand, Seiber, and Escudero 2001). Amenities that were captured by this study include: electricity, car or pickup, motorcycle, toilet, town water, television, telephone or cell phone, internet, in-house water well (*pozo*), and bicycle. Nearly every household in the survey has electricity and a toilet; the vast majority also have town water (Figure 10; Appendix, p. 17). No survey responses were differentiated by these amenities because respondents without these items are too few to produce reliable outcomes. Additionally, relatively few respondents have a motorcycle or access to the internet in their homes. Most respondents have a television, telephone, and bicycle. Nearly a fourth of households have a car or pick-up truck.

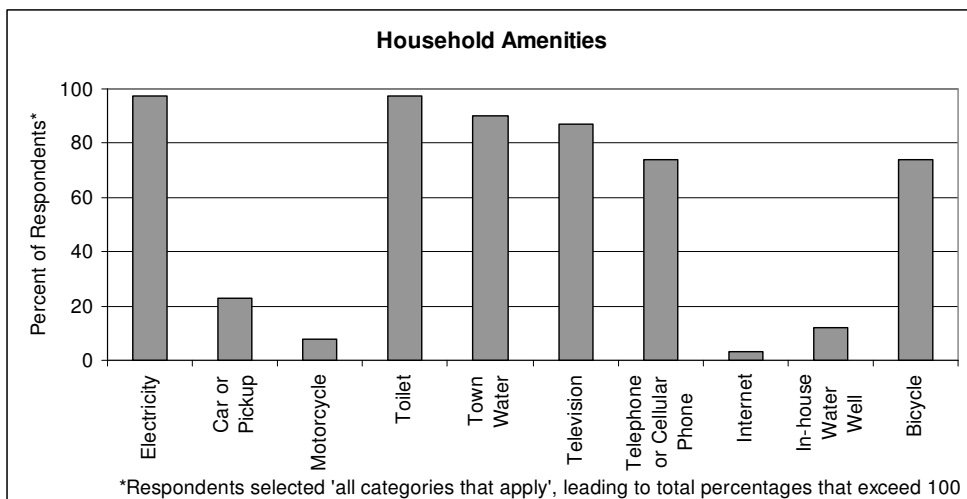


Figure 10. Percent of respondents that have household amenities listed.

Survey Results

This section reports survey outcomes that evaluate fertility patterns and identify any unmet need that may exist in Comalapa for family planning information and services. Unmet need can be defined as the “percentage of fecund women exposed to the risk of pregnancy who say they want to wait at least two years for another birth (spacing) or do not want any more children (limiting), but are not currently using a method of contraception” (Measure Evaluation). Information gleaned from the questions in this part of the survey is cross-referenced, where appropriate, with respondents’ demographic and socio-economic characteristics (as summarized in the *Profile of Respondents* section of this report).

Sexual Behavior and Fertility Trends

In an attempt to assess the onset of sexual activity for the population, participants were asked to identify their age at their first sexual experience. Nearly 40% (38.5%) report no sexual experience. This is highly dependent upon civil status and age, of course. Of those with no sexual experience, over 80% are single and aged 15-24 (Appendix, p. 18). Eighty-six percent (86%) of singles collectively (excluding those that are divorced, separated or widowed) report no sexual experience. Among those with sexual experience, the average age for that first experience was 20.3 for females and 20.4 for males. Most initiate sexual activity between about 16 and 23 years of age (Figure 11 and Appendix, p. 19). A slightly higher proportion of females had their first experience between ages 16-19 and males tended to have their first experience between 20 and 23. About 10% report that their first experience occurred between the ages of 12-15, with males slightly outnumbering females that gained experience at these ages.

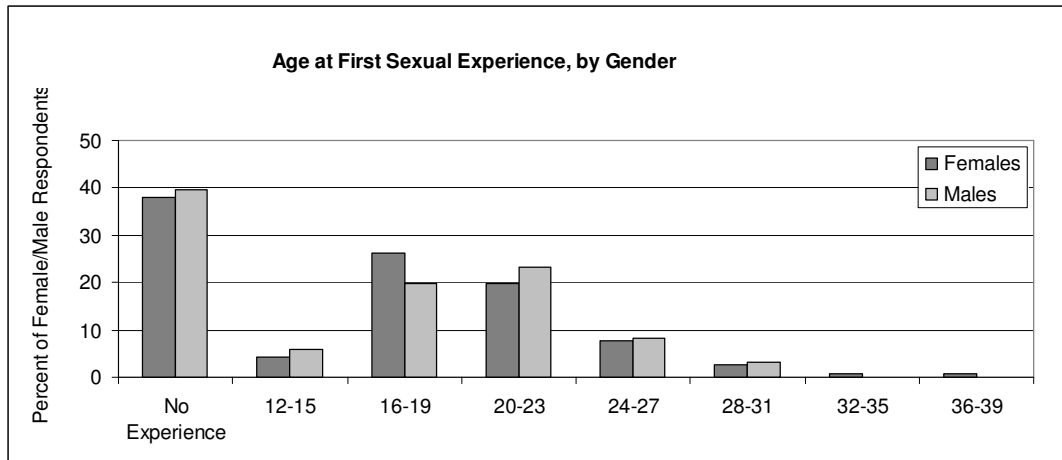


Figure 11. Age at first sexual experience, by gender.

There is also about a two year difference in the average age of respondents' first sexual experience when their faith is taken into account. For Catholics collectively the average age was 19.9 and for Evangelicals it was 21.7 (Appendix, p. 20). Figure 12 portrays these outcomes by four-year age groups, and indicates that there is a greater proportion of Catholics than Evangelicals that have their first experience between ages 12-27. After age 27 Evangelical respondents outpace Catholics, though the percentage of those that gained their experience at these later ages is quite small.

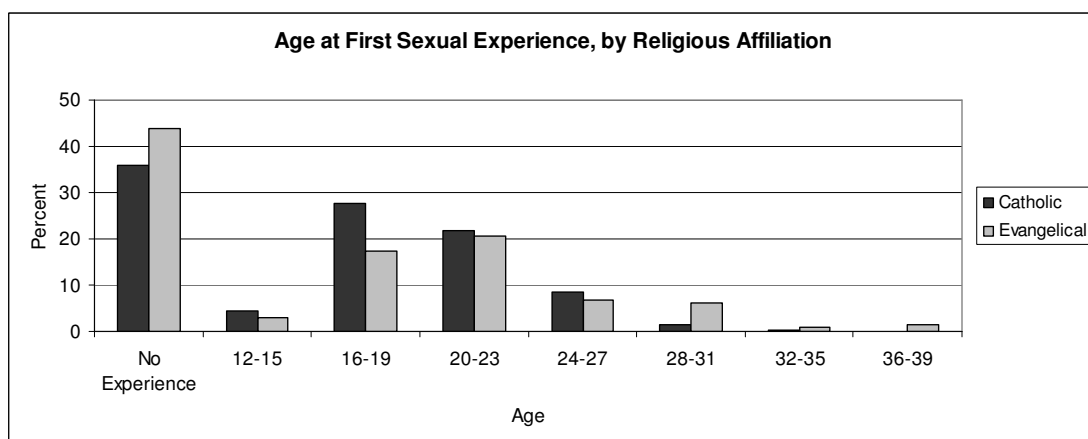


Figure 12. Age at first sexual experience, by religious affiliation.

The number of children a woman bears is a key fertility measure for females. This study also relies on number of pregnancies as an indicator of female fertility patterns. A pregnancy – intended or unintended – marks the onset of an event that leads to birth unless precluded by miscarriage or abortion, though abortion is illegal in Guatemala. There is, however, documentation of somewhat high rates of self-induced abortion typically under unsafe conditions and in response to unintended pregnancy (Singh, Prada and Kestler 2006).

Survey results indicate that among female respondents with sexual experience the average number of times pregnant is 4.08 and the average number of children is 3.86. Note that the figures given for average number of pregnancies and average number of children are a composite for women who are in their childbearing years, not at the conclusion of their childbearing years. Hence, reporting the average number of pregnancies by age generates a more meaningful statistic because the average number of pregnancies tends to increase with age: for women with sexual experience aged 20-29 the average is 2.2 pregnancies, for instance, whereas for those aged 40-49 the average is 5.8 pregnancies. Figure 13 shows that the average number of pregnancies increases rather consistently by age group, particularly for those between ages 20-24 through 35-39 (see also Appendix, p. 23). Ninety-three percent (93%) of females with sexual experience have been pregnant at least once. Conversely, no single females under age 25 report ever being pregnant (all single females in this cohort, in fact, report no sexual experience to date).

Survey outcomes also indicate that the vast majority of respondents had all of their children with the same partner. Less than 2% of females with sexual experience report that they have had any children with a partner other than their current partner. Among males with sexual experience, 1.5% have had any children with a partner other than their current partner.

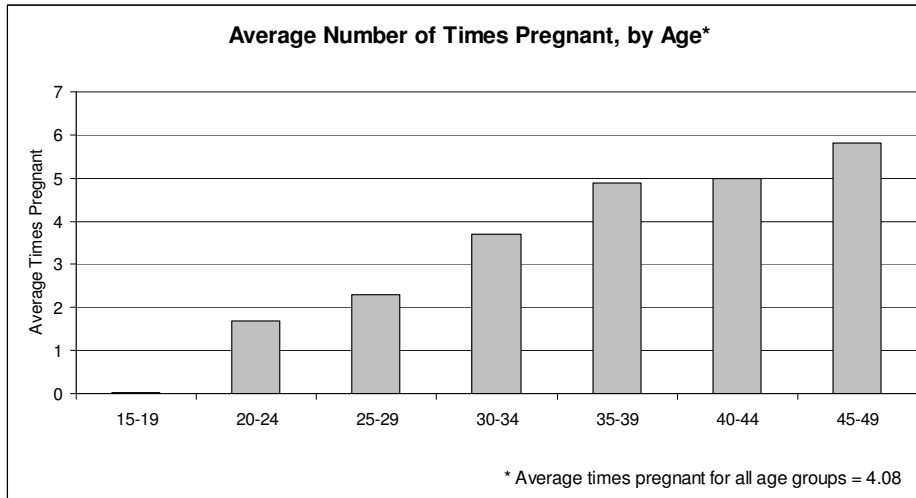


Figure 13. Average number of times pregnant, by age group (excludes women with no sexual experience).

There is no appreciable difference in average pregnancies among women (with sexual experience) when female occupation is considered. Those employed as weavers have had an average of 4.2 pregnancies; those that work in retail and service occupations report an average of 4.1 pregnancies. There are too few females working in other occupation classes to generate reliable results and they are excluded here. Some distinction in average pregnancies occurs, however, if accounting for women's occupation status. Those with no occupation report a higher average number of pregnancies than those with permanent work or with temporary or seasonal work (see Table 1). The average of 4.4 pregnancies for women with permanent work is skewed by six women in this group that have at least ten children; removal of these six cases yields an average 3.8 pregnancies for women with permanent work. There is also disparity in average number of pregnancies relative to female workplace. Those that work within the home average 4.2 pregnancies whereas those that work outside the home average 3.5 pregnancies.

Table 1. Average number of times pregnant, by female occupation status.

Occupation Status (Female)	Average Times Pregnant
No Occupation	4.8
Permanent Work	4.4
Temporary or Seasonal Work	3.9

Average pregnancies also vary by additional factors, including education, religion, and male employment characteristics. Differences in household amenities was not associated with any notable variation in average number of pregnancies among respondents. The level of education women achieve is frequently a viable predictor of pregnancy and birth rates, and such is the case in this study. Table 2 and Figure 14 highlight the incidence of pregnancy for female respondents in Comalapa. There is a substantial difference between those with no formal education and those that completed a primary education (average pregnancies of 7.0 and 4.6, respectively). In similar fashion but more notably, the incidence of pregnancy among those with a middle school education falls to less than half of those with no education. Each of the differences between average pregnancies by education level in Table 1 (except between middle and secondary school educations) is statistically significant at the 0.01 level when an independent sample t-test is applied. Moreover, all of the women that reported more than eight pregnancies are not educated beyond the primary level (see Figure 14).

Table 2. Average number of times pregnant, by female level of education (there were too few respondents with a university level education and sexual experience to report a meaningful average for them).

Highest Education Completed	Avg. Times Pregnant
None completed	7.0
Primary/elementary	4.6
Middle school/junior high	3.2
Secondary/high school	2.8

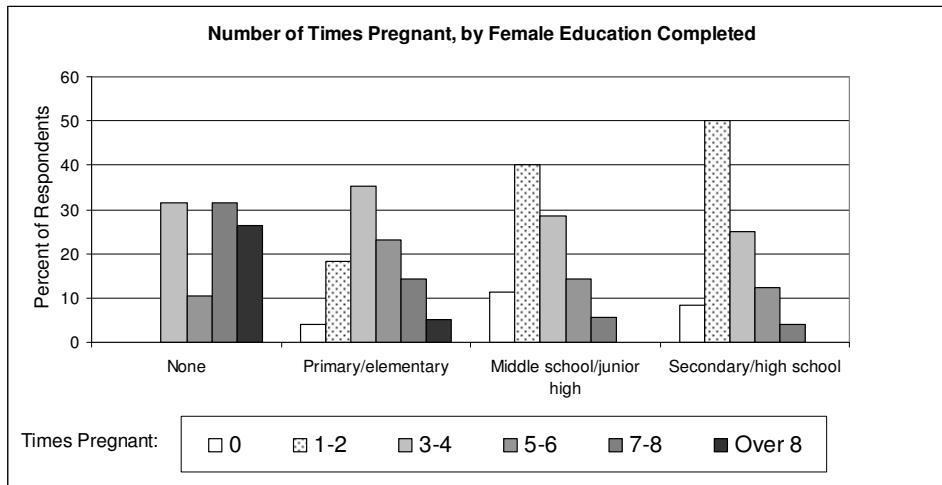


Figure 14. Number of times pregnant, by female education level (excludes women with no sexual experience).

The average number of times pregnant varies by religious affiliation as well. Comalapa women in the survey that are Catholic report an average of 4.7 pregnancies. Conversely, women that are Evangelical average 3.5 pregnancies (Appendix, p. 31). An independent sample t-test confirms that this difference in means (average pregnancies) is statistically significant at the 0.01 level.

There is also variation in average pregnancies when occupation is considered. Table 3 compares average pregnancies by husbands' occupations (the identifier 'husbands' is used in this report rather than referencing husbands and male partners, primarily because the latter only constitute 3% of respondents, those that are in union). Women whose husbands are engaged in agriculture average 5.3 pregnancies, while women with husbands in either construction and general labor or in retail and services average fewer than 4.5 pregnancies. None of these differences, however, prove statistically significant at the 0.05 level. Likewise, there is some difference – though less pronounced overall – in average pregnancies by men's occupation status (see Table 4). There is no appreciable variation in average pregnancies for

Table 3. Average number of times pregnant, by male occupation (other occupations excluded because there were too few respondents in those occupations).

Occupation (Male)	Avg. Times Pregnant
Construction and General Labor	4.4
Agriculture	5.3
Retail and Services	4.2

Table 4. Average number of times pregnant, by male occupation status.

Occupation Status (Male)	Avg. Times Pregnant
Permanent Work	4.4
Temporary or Seasonal Work	4.0

women whose husbands work within the home (4.2 pregnancies) and those with husbands that work outside the home (4.3 pregnancies).

The survey also assessed the age for females' first pregnancy. For all respondents collectively this was 20.8 years of age (females' average age at first sexual experience was 20.3). Most experience their first pregnancy in their late teens or early twenties (see Figures 15 and 16). Nineteen years was the most common age at first pregnancy for this survey.

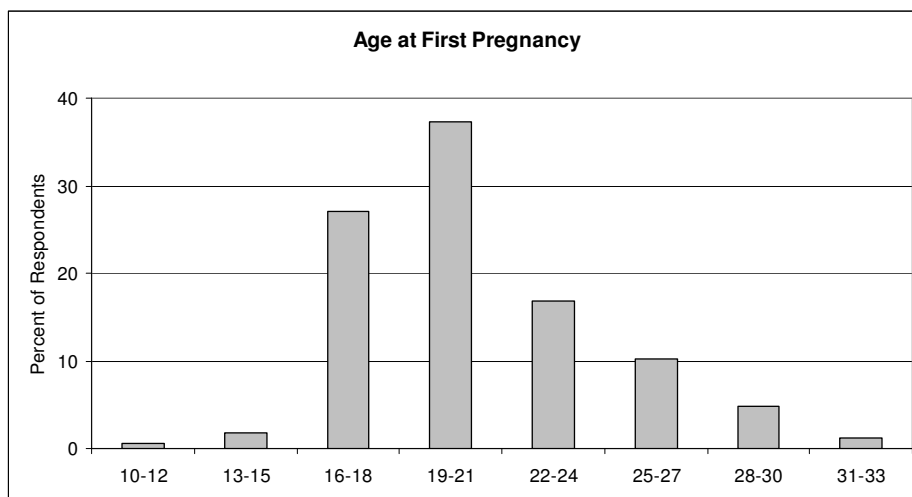


Figure 15. Age at first pregnancy, given in three-year groupings.

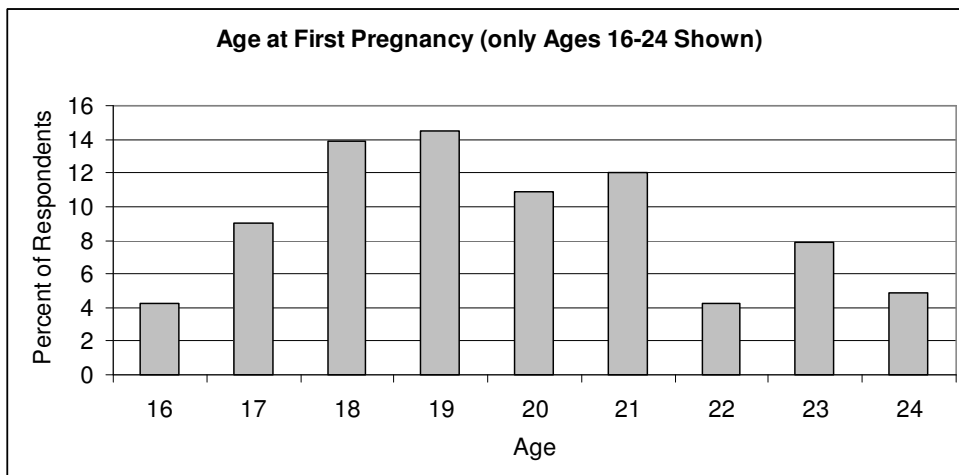


Figure 16. Age at first pregnancy by individual year for females aged 16-24 (an inset of the chart in Figure 15).

There are incremental differences in average age at first pregnancy when level of education and religious affiliation are included as factors. Table 5 displays age at first pregnancy, by education. Those without at least a primary education ('none' in Table 5) have the youngest average age at first pregnancy (19.5 years) and those that have completed a secondary education average 23.6 years at first pregnancy. These outcomes seem to suggest, particularly for those educated at the primary or middle school level versus those without an education, that education plays a larger role in the number of pregnancies a woman is apt to experience (and, correspondingly, in her number of children) than it does in the average age at first pregnancy. In terms of religious affiliation, Catholic respondents have an average age at first pregnancy of 20.5 years, while for Evangelicals this is 21.5 years.

Table 5. Average age at first pregnancy for females, by level of education.*

Highest Education Completed	Avg. Age at First Pregnancy
None	19.5
Primary/elementary	20.1
Middle school/ junior high	20.7
Secondary/high school	23.6

*Only one female respondent with sexual experience had completed a university education.

Women were also asked if they are currently pregnant. Ninety-two percent of female respondents with sexual experience reported that they are not currently pregnant and 8% declared that they are currently pregnant.

With respect to fertility patterns, males fielded questions about the number of children they have and how old they were when their first child was born. The average number of children for male respondents is 3.78 (also see Figure 17 for a chart that contains number of children). As with the female rendering for average number of children, note that all males aged 15-49 with sexual experience are included in this statistic and number of children consistently increases with age (i.e., fathering children has not ceased for many of these men).

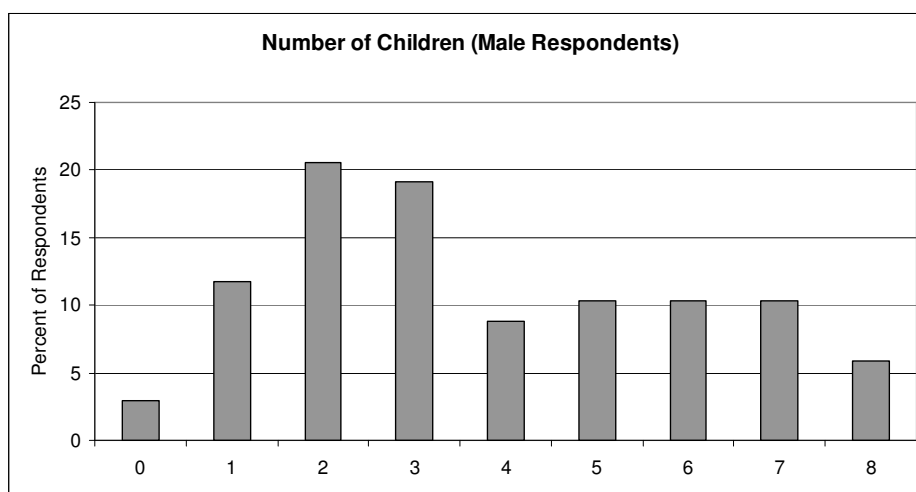


Figure 17. Number of children for male respondents (excludes male respondents with no sexual experience).

The average age for males at the birth of their first child was 23 years old (males' average age at first sexual experience was 20.4 years). The average age does not vary by religion (23.0 for Catholics and 23.2 for Evangelical) but does differ moderately by level of education completed (see Table 6). Men with no education are barely 20, on average, at the birth of their first child but those with a secondary education average nearly 25 years old at their first child. This is the only difference between paired groups – between no education and the highest level of education – that proves statistically significant under a t-test of independent samples.

Table 6. Average age at first child for males, by level of education.*

Highest Education Completed	Avg. Age at First Child
None	20.3
Primary/elementary	22.2
Middle school/ junior high	23.4
Secondary/high school	24.9
University*	25.0

* based on only 3 responses.

Family Planning Awareness and Prevalence

A key component of this survey was to assess family planning awareness, attitudes and prevalence in Comalapa. In this vein, all respondents were asked if they are aware of any birth control methods. Fifty-nine percent (59%) reported 'yes' to this query, and 41% said 'no' they were not aware of any birth control methods. The difference between female and male responses to this question is not notable nor is it statistically significant. Fifty-seven percent (57%) of females (all ages in aggregate) claim they are aware of a birth control method; for males in aggregate, this figure is 65%. Outcomes vary moderately when age is accounted for, but such differences, again, are not substantial (see Figure 18; see

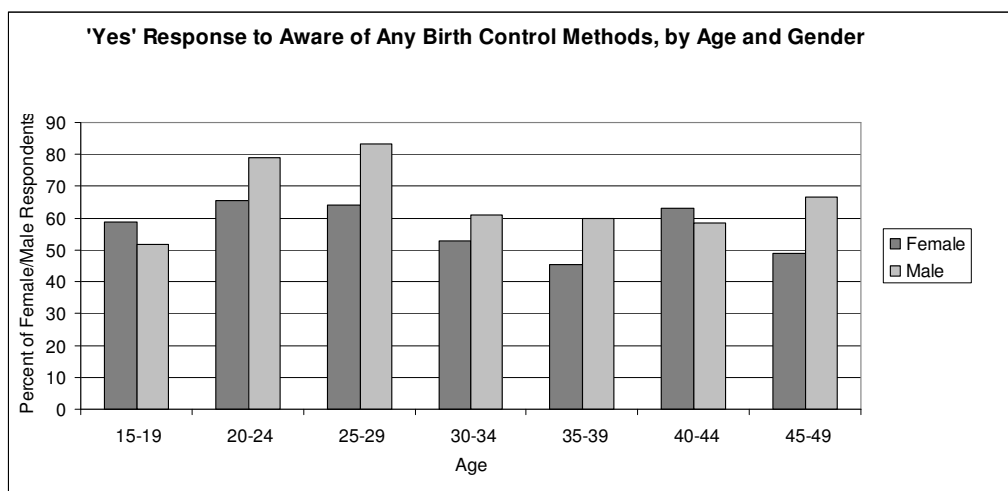


Figure 18. 'Yes' response, by age and gender, to the question: 'Aware of any birth control methods?'

corresponding table in Appendix, p. 51). It is evident that in the age 15-19 group a slightly higher proportion of females than males are aware of birth control. In the 20-39 age groups males are somewhat more aware of birth control methods. The highest rate of birth control awareness for both females and males is manifest in those aged 20-29. About 65% of females and about 80% of males at these ages claim they know of birth control methods. Though there are modest differences in responses by gender and age, none are statistically significant.

Awareness of birth control methods was virtually undifferentiated when respondents' civil status, religion, and household amenities were considered. With respect to civil status, 61% of singles and 59% of married respondents know about birth control. Results based on religious disposition were likewise similar (see Table 7), as were outcomes for household amenities (see Table 8). Hence, there was no appreciable difference between respondents organized by these characteristics and the populace at large (where 59% reported awareness of birth control methods).

Table 7. Percent aware of birth control methods, by religious affiliation.

Religious Affiliation	Percent aware of any birth control methods
Catholic	57.6
Evangelical	61.9
No religious affiliation	63.6

Table 8. Percent aware of birth control methods, by household amenities.

Household Amenity	Percent aware of any birth control methods
Car or pick-up truck	60.8
Television	61.5
Telephone/cell phone	65.8
In-house well	65.4
Bicycle	58.7

When incidence of pregnancy is considered, there is also little divergence in outcomes: 59% of those who have been pregnant versus 67% who have never been pregnant are aware of birth control. There is some discrepancy in results when birth control awareness is examined in the context of number of pregnancies (see Figure 19). Yet this variation appears to be age-related more than an indicator that birth control awareness corresponds to number of pregnancies. To wit, those with fewer births (i.e., two or less in the chart) and higher levels of awareness are primarily women aged 15-29. Three-fourths of respondents in these ages reported they are aware of birth control methods, whereas only a little over half aged thirty and over with two or fewer births claim they know about birth control methods (also see Figure 18 for birth control awareness by age).

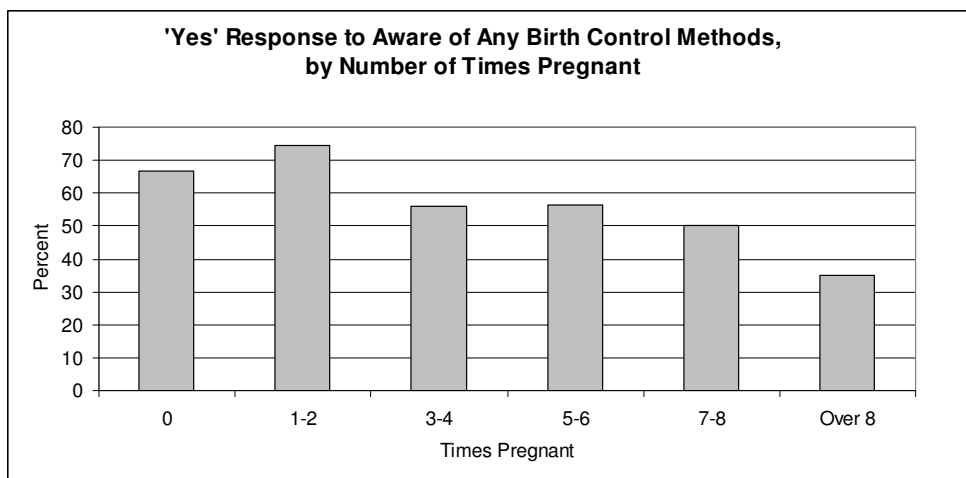


Figure 19. 'Yes' response, by number of pregnancies, to the question: 'Aware of any birth control methods?'.

In contrast to the limited variation in birth control awareness by the respondents' attributes just discussed, there are clear differences by education levels (Figure 20; table in Appendix, p. 53). There is a consistent and marked increase – in somewhat 'lock-step' fashion – of birth control awareness with each advance in level of education completed. Only two of the possible pairings by education are not statistically significant: no education ('none') compared with primary/elementary education, and secondary/high school education compared with university education. Differences reported for birth control awareness are highly significant (0.01 level) for each other paired education level (i.e., the eight additional pairings by education level are statistically significant).

Respondents with an awareness of birth control methods were asked to identify the method(s) they know about; results are summarized in Figures 21 and 22. The majority are familiar with condoms, the pill and injection. Fewer respondents, though not an unsubstantial number, are aware of sterilization (both female and male), rhythm, and intra-uterine device (IUD). Methods that survey respondents are aware of do not differ notably by gender (Figure 22), except that men are somewhat more aware than women about condoms and sterilization

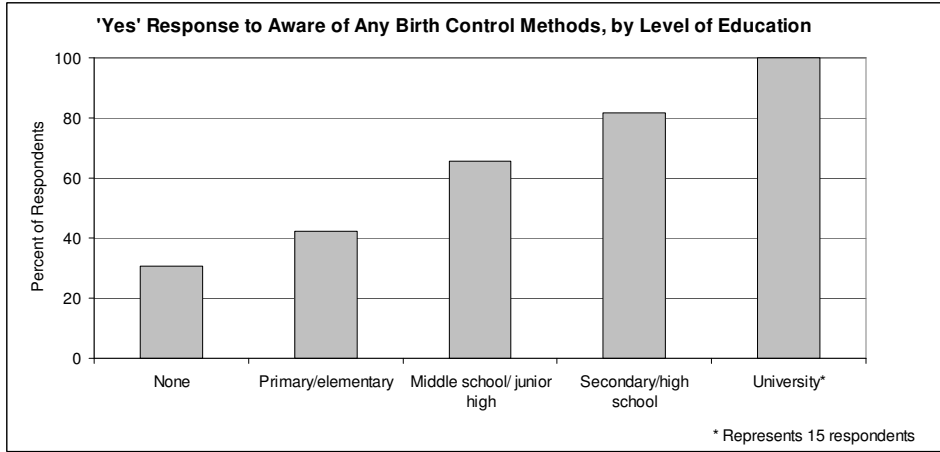


Figure 20. 'Yes' response, by education completed, to the question: 'Aware of any birth control methods?'

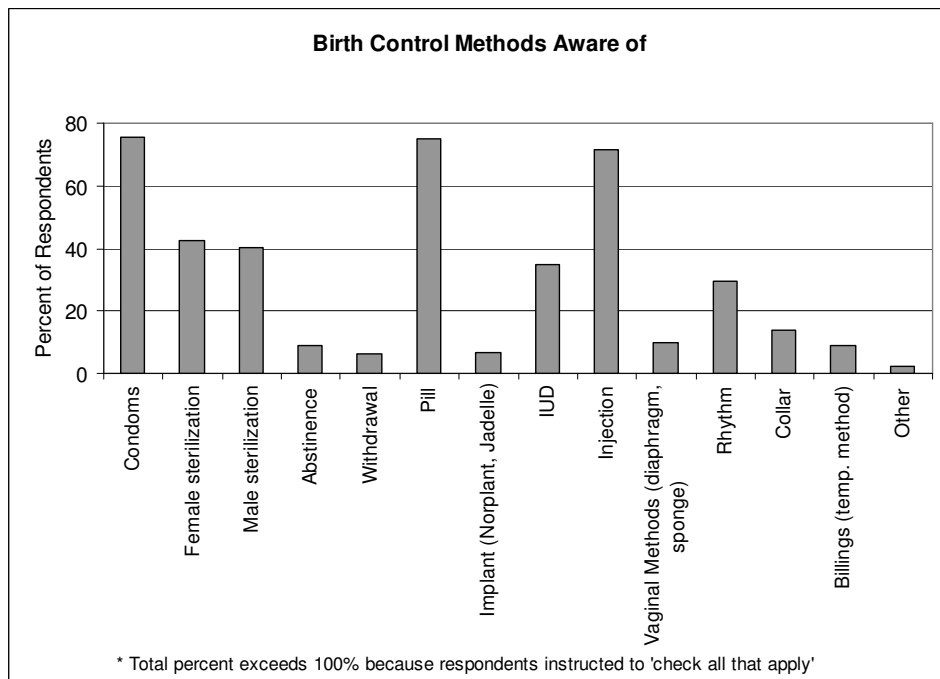


Figure 21. Birth control methods awareness; percent of respondents indicates the proportion of respondents that are aware of that method, and respondents were asked about each method in turn, leading to total percentages that exceed 100%.

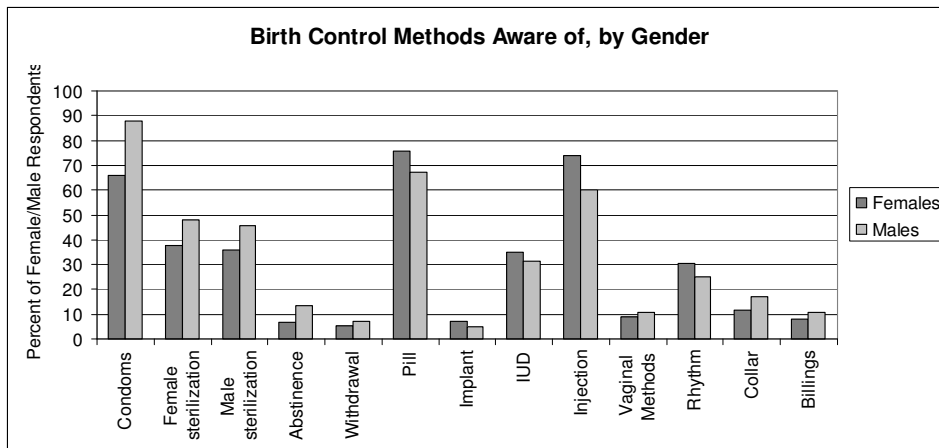


Figure 22. Birth control methods awareness, by gender.

and women are slightly more familiar than are men with the pill, IUDs, and injection. None of these differences is statistically significant, however.

Respondents that know of birth control methods learned this at various ages, but reception of this information peaked for both males and females between 15 and 17 (Figure 23). Males are more likely to obtain this information earlier, between the ages of 12-17; most females first learn about birth control methods when they are aged 15-20. This trend extends beyond age 20, as females outpace males in gaining this information at somewhat later ages.

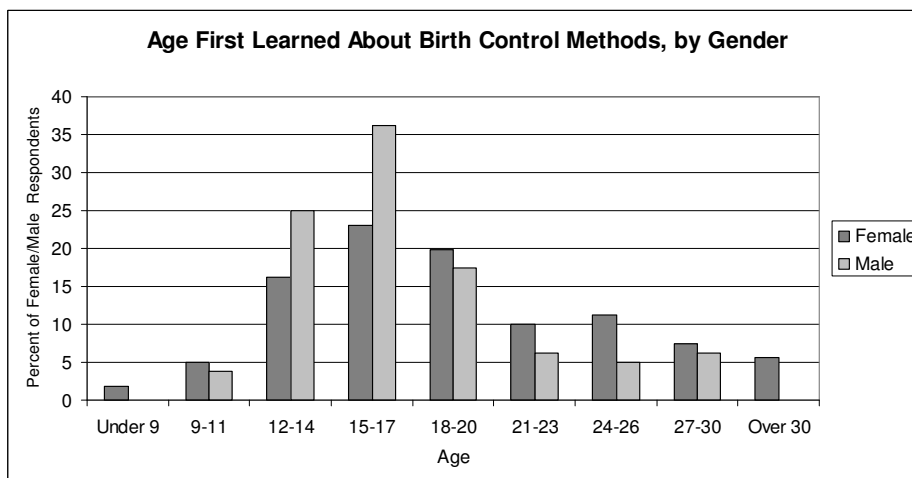


Figure 23. Age when first learned about birth control methods, by gender.

There is some variation in the age of respondents when they first learned of birth control methods, depending on their religious affiliation (Figure 24). Nearly 40% of Evangelical survey respondents first learned of birth control between ages 15-17. This compares to only 20% of Catholics that first learned of such methods at these ages. Though most Catholics first learned of birth control between ages 12-20, one-fourth gained this knowledge after age 23; only 11.5% of Evangelicals learned of birth control methods after age 23 (see table in Appendix, p. 62).

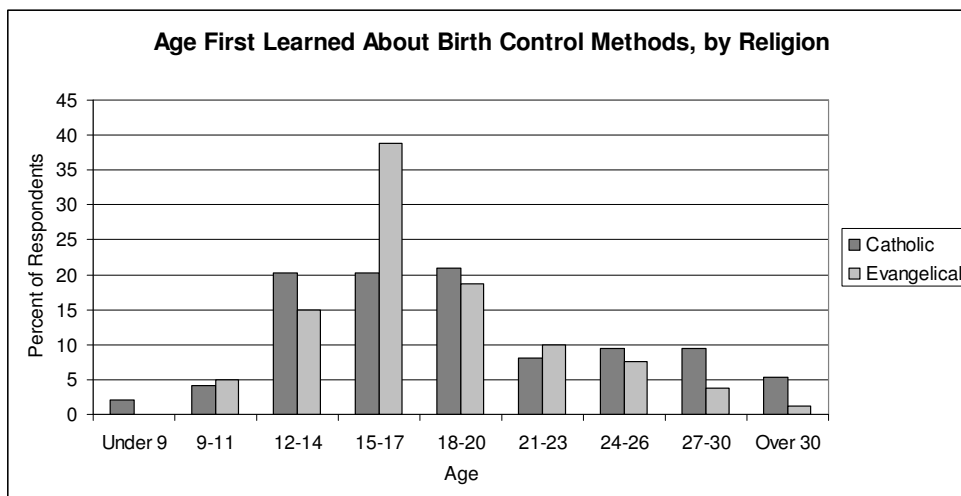


Figure 24. Age when first learned about birth control methods, by religion.

Respondents who are aware of birth control received their information from primarily three sources – school, a health promoter, or through some form of media (Figure 25). Both females and males gained their information about methods mainly from school (40% and 53%, respectively), but females exhibit a greater propensity than males (27% and 15% respectively) to get information from a health promoter (table in Appendix, p. 64).

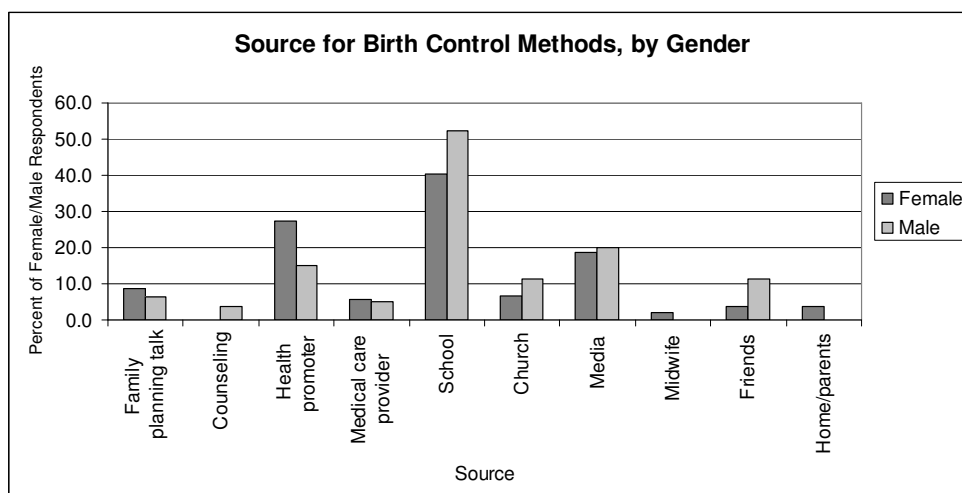


Figure 25. Source of information for birth control method(s), by gender; respondents checked 'all that apply'.

When queried about the use of birth control, 55% of respondents with sexual experience reported that they have never used a birth control method (including a natural method) and 45% with sexual experience declared they have used a method. All data given in this paper for birth control usage excludes individuals with no sexual experience (only one respondent in this survey that reported no sexual experience has used a birth control method). Usage is slightly higher among females, such that 48% of women claimed they have used birth control, and 41% of men have used a method.

The percentage of respondents with sexual experience that currently use a birth control method is given in Table 9. Among all respondents, somewhat fewer (35%) are currently using a method than have ever used a method (45%) – as would be expected. There is little variation by gender in those who currently use a birth control method (Table 9).

Table 9. Percent of all respondents and by gender that report they currently use a birth control method.

Respondents	Percent currently using a birth control method
All Respondents	35.3
Females	33.3
Males	38.9

There is little differentiation in birth control usage across most demographic and socioeconomic characteristics. Such is the case with age (Figure 26), except for the higher rate of usage among those aged 25-29 and 40-44 (about 55% have used a method) and those aged 45-49 (35% usage). However, since those without sexual experience or who unaware of birth control are excluded from the data set, which is then further reduced by age group (i.e., most age groups only reached ten to twelve respondents for this question) results for birth control usage by age are inconclusive. More data would need to be collected to have confidence in these outcomes.

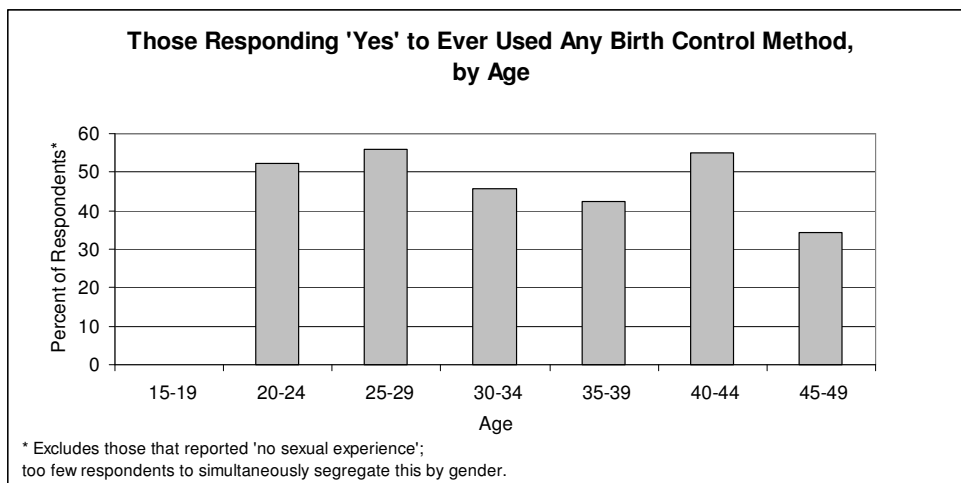


Figure 26. 'Yes' response, by age, to the question: 'Ever used a birth control method?'.

Outcomes for use of birth control by civil status and religion are essentially undifferentiated as well. Forty-four percent (44%) of singles with sexual experience and 46% of married respondents have used a birth control method. Note that of 177 singles in this survey, only 18 have sexual experience and responded to this question – a higher number of respondents with this status would lead to more confidence in their reported rate of 44%. Results also vary little by religious affiliation: 44% of Catholics and 48% of Evangelicals say

they have used a birth control method. Similarly, household amenities appear to have little impact on variations in birth control usage (Table 10). It is somewhat higher among households with a car or truck but this difference is not statistically significant.

Table 10. Percent responding 'yes', by household amenities, to the question: 'Ever used a birth control method?'

Household Amenity	Percent that have used a birth control method
Car or pick-up truck	60.0
Television	47.9
Telephone/cell phone	48.9
In-house well	52.2
Bicycle	47.8

Respondents' education exhibits some association with their birth control use (Figure 27; Appendix, p. 69). Outcomes for secondary school and university are curious in that respondents at these higher levels of education show lower rates of birth control use than do respondents with a middle school education. In the case of university education this is perhaps explained by the low number of respondents (10) such that outcomes are not completely reliable and may not reflect the university-educated population at large. The secondary school category has a sufficient number of respondents to be reliable. In fact, but for the 66% rate of birth control use among those with a middle school education, there would be a consistent upward progression in usage from lowest to highest levels of education. So it may be that the middle school education category is the anomaly in Figure 27, in terms of the exceptionally high rate of usage in this study by those with that level of education.

Individuals also differed in their birth control practices with respect to two of their occupational characteristics. First, lack of an occupation for females appears – in this study –

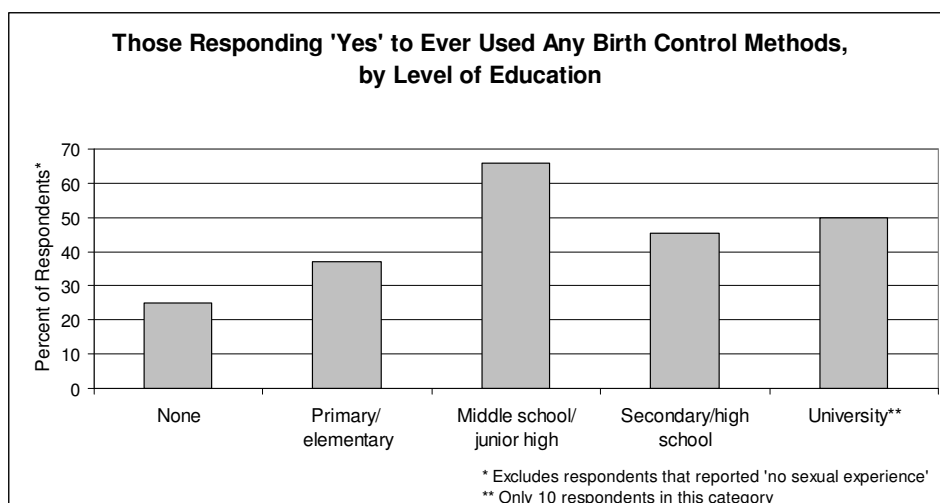


Figure 27. 'Yes' response, by education completed, to the question: 'Ever used a birth control method?'.

to reduce the likelihood of birth control usage (Table 11). For the 28% of women that report no occupation, only 34% have ever used a birth control method. About half of respondents have used a method where the female has some form of employment – either temporary or permanent. The 34% rate for ever using a birth control method when the female has no occupation falls to 27% if this is assessed exclusively for females (i.e., 34% of females and males combined have used a method when the female has no occupation, whereas 27% of females have used a method when they have no occupation). Second, though not statistically significant, proportionally fewer individuals have used a method when the male works within the home (38% have used a method when the male works in the home versus 48% when he works outside the home; Appendix, p. 77). Birth control usage – in terms of ever using a method – was not differentiated by any other female or male occupation characteristics (for these outcomes, see tables in Appendix, pp. 75-76; 78; 81).

Table 11. Percent responding 'yes', by female occupation status, to the question: 'Ever used a birth control method?'

Female Occupation Status	Percent that have used a birth control method*
Don't have an occupation	34.0
Permanent	53.1
Temporary	48.4

* Includes male and female respondents. The difference in outcomes for those that 'don't have an occupation' and those with a 'permanent' occupation is statistically significant at the 0.05 level. The difference between no occupation and a temporary occupation is not statistically significant.

Use of a birth control method was also cross-tabulated in this study with number of children, number of times pregnant, and age at first pregnancy. Yet results suggest that the potential impact of these factors upon use of a method is either negligible or inconclusive and outcomes are therefore left in the appendix for reference (see pp. 72-74 of the Appendix).

The survey also assessed why individuals are not currently using a method. Results indicate that among those with sexual experience that have a knowledge of birth control and a current partner, birth control's interference with the body (19%) and religious beliefs (18%) are the most common reasons cited for not using a method (Figure 28; Appendix, p. 83).

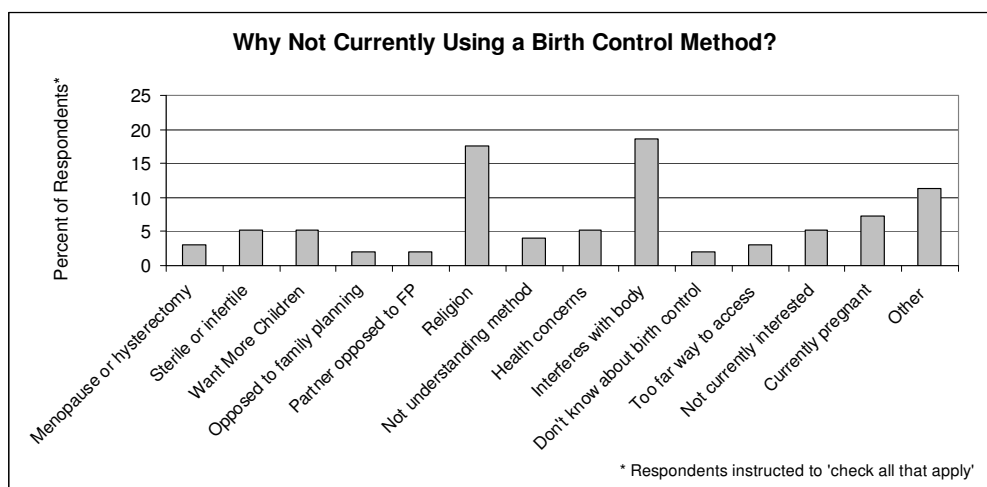


Figure 28. Reasons that respondents with sexual experience, knowledge of any methods, and a partner are not currently using a birth control method.

Individuals that currently use birth control employ varied methods, but chiefly use injection, rhythm, female sterilization and condoms (Figure 29; Appendix, p. 85).

Interestingly, 14% of men claim they currently abstain from sexual activity but no women report abstinence as a method. The actual number of respondents that report current use of a method is rather small, however, particularly in the case of males, and outcomes must therefore be interpreted cautiously. Though Figure 29 has responses partitioned by gender, most individuals likely identified the method(s) they currently use with their partner, i.e., as a couple. For comparison, Figure 30 portrays these outcomes for males and females combined (table is in Appendix, p. 84). This generates a higher number of respondents (when not bifurcated by gender) which also produces more credible outcomes.

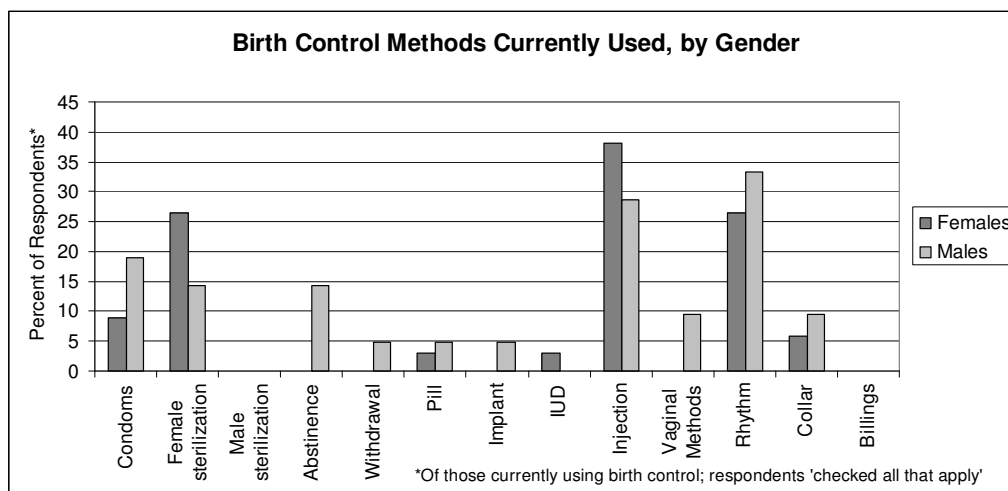


Figure 29. Percent of respondents (currently using birth control) who are using the given method, by gender.

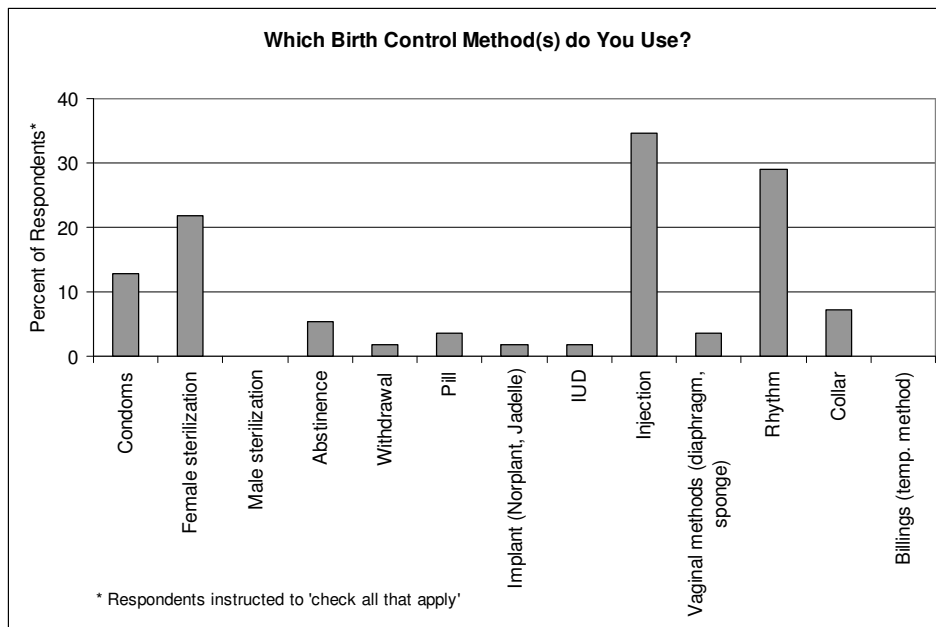


Figure 30. Percent of respondents (currently using birth control) who are using the given method.

Respondents that use a method access that method from numerous sources (Figure 31; Appendix, p. 86). Thirty-five percent (35%) utilize a health center, the most common source for individuals in the survey. Other notable points of access but that are less frequently used include volunteer promoters (16%), private hospitals or clinics (15%), an APROFAM clinic or APROFAM promoter (15%) and Church (11%). Due to the limited number of respondents that currently use a method, a summary of their responses apportioned by gender is not entirely useful. cursory results along these lines suggest that females more than males access a method at health centers or private clinics, whereas males are more apt than females to visit a church or pharmacy to obtain their birth control method (Appendix, p. 87).

While less than half have ever used a birth control method, plans for using a method are also relatively low. Figure 32 highlights outcomes for respondents with sexual experience that are also aware of birth control methods. Over three-fourths either have no plans to use a method or are not sure when they might use a method (see table in Appendix, p. 88).

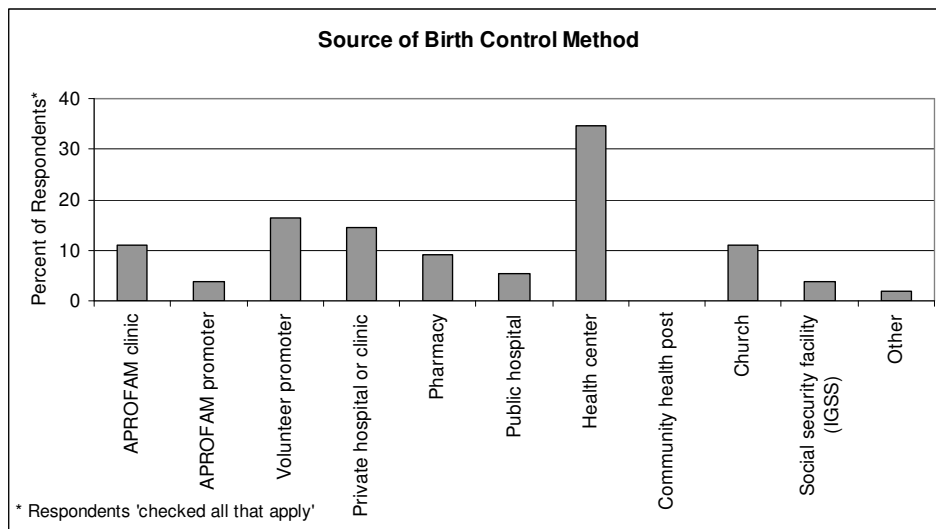


Figure 31. Percent of respondents (currently using birth control) that access their method from the given source.

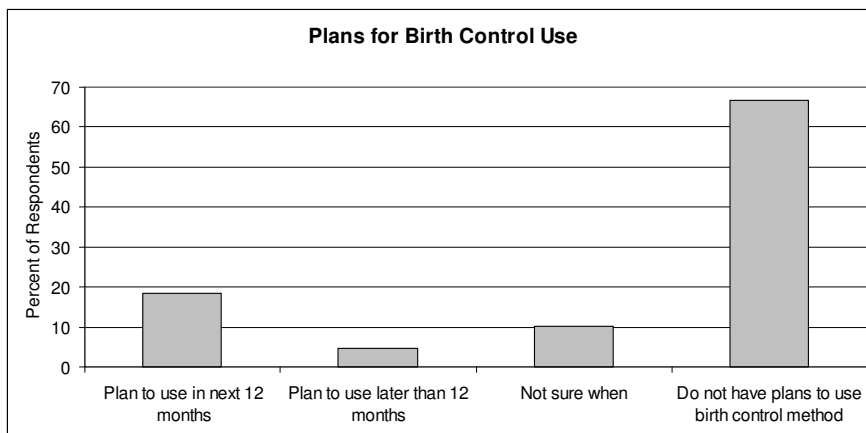


Figure 32. Plans for use of a birth control method; includes only respondents with sexual experience who are aware of birth control methods.

When plans for birth control use are assessed in the context of respondents' characteristics, only a couple appear to influence plans for a method. Education completed appears to again be highly correlated (Table 12; Appendix, p. 89). Over 85% of those with a primary education have no plans to use a method; this drops to 57% for those with a secondary education. These differences are highly significant at the 0.01 level.

Table 12. Respondents with no plans to use a birth control method or unsure when they will use a method, by level of education completed. Includes only respondents with sexual experience who are aware of birth control methods.

Highest Education Completed*	Percent with no plans or unsure when
Primary/elementary**	85.5
Middle School/Junior High	74.3
Secondary/High School	57.1

* The 'None' and 'University' categories of education completed are excluded because there were too few respondents to this question with those levels of education.

** Differences between Primary/Elementary and Secondary/High School are highly significant, at the 0.01 level; others are not significant with respect to one another.

Age is also a factor when the responses of younger individuals in the survey are compared to those of older respondents (Figure 33; Appendix, p. 90). There is a gradual increase – from younger to older – in the percentage of individuals that express no plans to use a birth control method. The proportion reporting they have no plans to use a method is quite high at all ages. However, slightly over 60% of those aged 20-29 collectively do not have plans, whereas over 80% of those aged 35-49 have no intent to use a method.

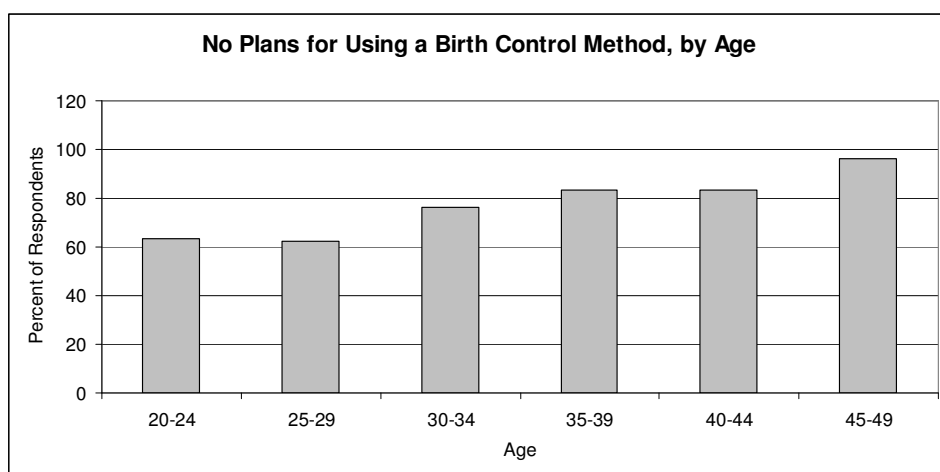


Figure 33. Respondents with no plans to use a birth control method or unsure when they will use a method, by age. Includes only respondents with sexual experience who are aware of birth control methods. (Differences between those aged 45-49 and the two groups 20-24 and 25-29 are significant at the 0.01 level. The difference between those aged 45-49 and 30-34 is significant at the 0.05 level; other differences between groups are not statistically significant.)

Thirdly, there is some variation by male occupation with respect to respondents' disposition towards birth control use (Table 13). Respondents in households where the male is employed in agriculture are more apt to have no plans to use a method than those where the male works in a retail or services occupation. These differences do not have statistical significance, however.

Table 13. Respondents with no plans to use a birth control method or are unsure when they will use a method, by male occupation. Includes only respondents with sexual experience who are aware of birth control methods.

Male Occupation	Percent with no plans or unsure when
Construction/general labor	74.1
Agriculture	81.5
Retail and Services	63.0

* None of the differences between groups is statistically significant.

Other respondent characteristics do not appear to be associated with intent to use birth control. The characteristics that were analyzed but little differentiate respondents' plans for using a method include (for details on each outcome see the given page number in the appendix):

- Number of children (p. 92)
- Civil status (p. 93)
- Female occupation status (i.e., permanent or temporary/seasonal; p. 94)
- Gender (p. 95)
- Religious affiliation (p. 96)
- Household amenities (p. 97)
- Male occupation status (p. 98)
- Male workplace (inside or outside the home; p. 99)
- Female occupation (p. 100)
- Female workplace (p. 101)

Individuals with sexual experience that are aware of birth control but have no plans to use a method, collectively cite a variety of reasons they don't intend to use a method (Figure

34; Appendix, p. 102). For individuals with a partner, only three are perceptibly common across respondents: religion (17%), birth control interferes with the body (17%), and 'not currently interested' (20%). Seventy-nine percent (79%) of those citing religion as a reason are Catholic and 21% are Evangelical.

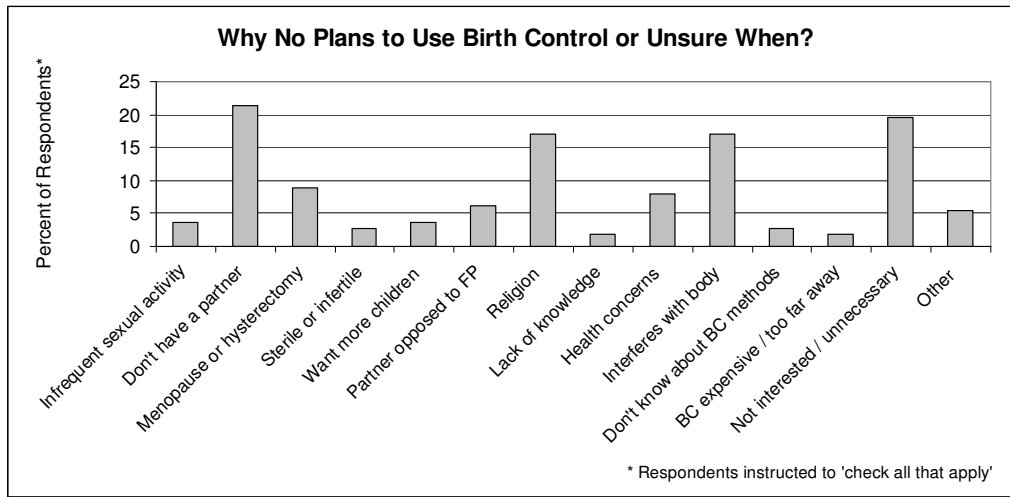


Figure 34. Why respondents with sexual experience who are aware of birth control methods have no plans to use a method or are unsure when they will use a method.

Eighteen percent (18%) of respondents with sexual experience that are aware of birth control plan to use a method within the next twelve months. Five percent (5%) of such respondents plan to use a method later than twelve months (refer back to Figure 32). Injection is the preferred form of birth control among those that plan to use a method, either within twelve months or thereafter (Figure 35; Appendix, p. 103). Injection is one of the most recognized methods (refer back to Figure 21), and the method most currently used (refer to Figure 30); it is also the primary method that respondents plan to use (Figure 35). Conversely, although a high proportion of individuals are aware of the pill, few currently use it nor have any plans to use it (Figures 21, 30 and 35, respectively).

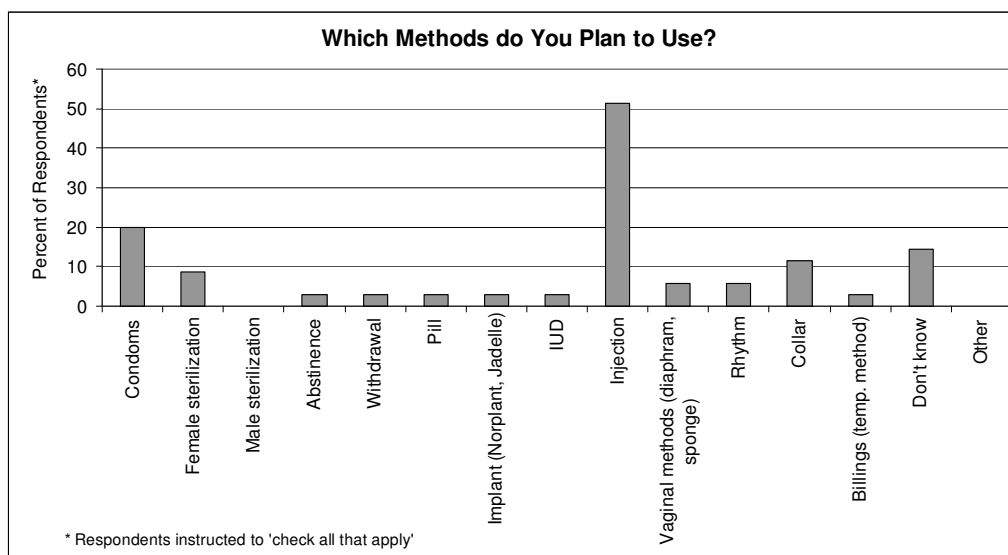


Figure 35. Percent of respondents that plan to use the given birth control method, either within the next twelve months or thereafter; numbers are too small to segment these two groups by the timing of their planned use (i.e., only 5% plan to use a method later than twelve months).

Eighty-one percent (81%) of respondents are comfortable visiting a family planning clinic or family planning provider. Those who are reluctant to make such a visit collectively identify several reasons, with religion and 'not currently interested' constituting the most typical responses (Figure 36; Appendix, p. 112). These outcomes are to be viewed cautiously, however, because there are relatively few respondents (19%) who are not comfortable visiting a clinic, which is further segmented by those who cite any of the particular reasons that appear in Figure 36.

Females are more comfortable visiting a family planning clinic or provider (85% of females and 72% of males are comfortable with such a visit). This difference, though not substantial, is nevertheless statistically significant, at the 0.05 level. There is also some variation by gender across age groups (Figure 37; Appendix, p. 106). Proportionally more females than males in the 20-29 and 40-49 age groups are comfortable visiting a family planning agency or provider. When gender is aggregated by age, it is apparent that those aged

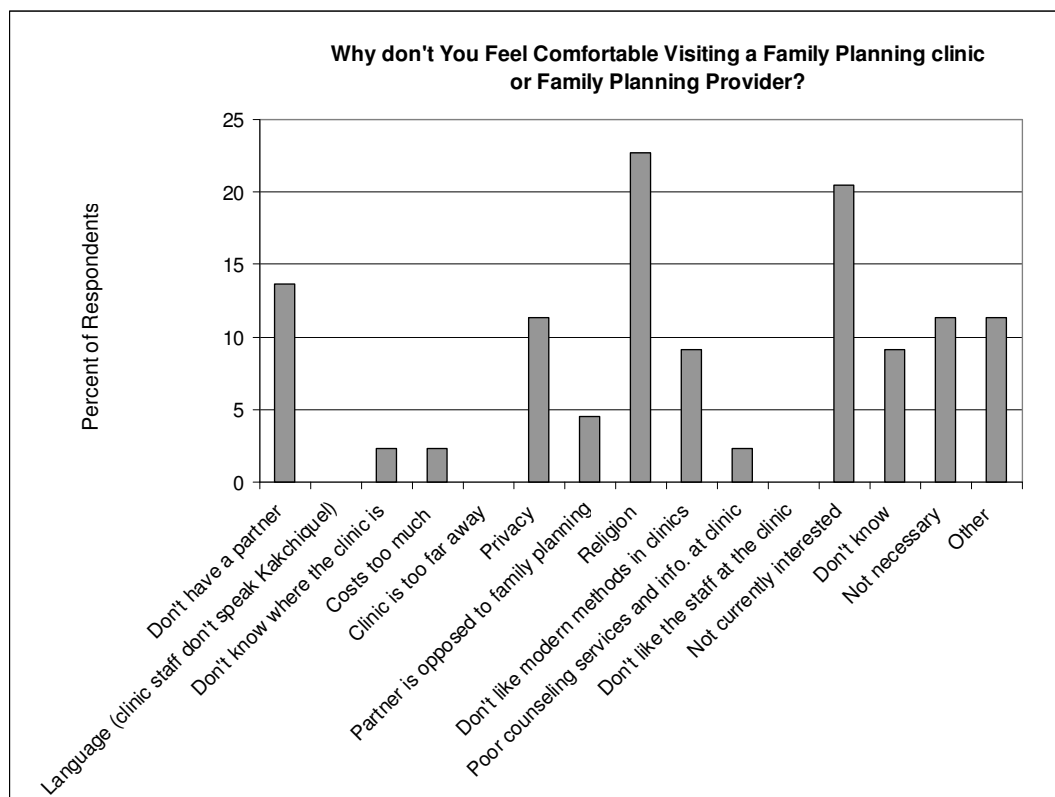


Figure 36. Of those that do not feel comfortable visiting a family planning clinic or provider, the percent of respondents who cite the given reason; respondents were instructed to 'check all that apply'.

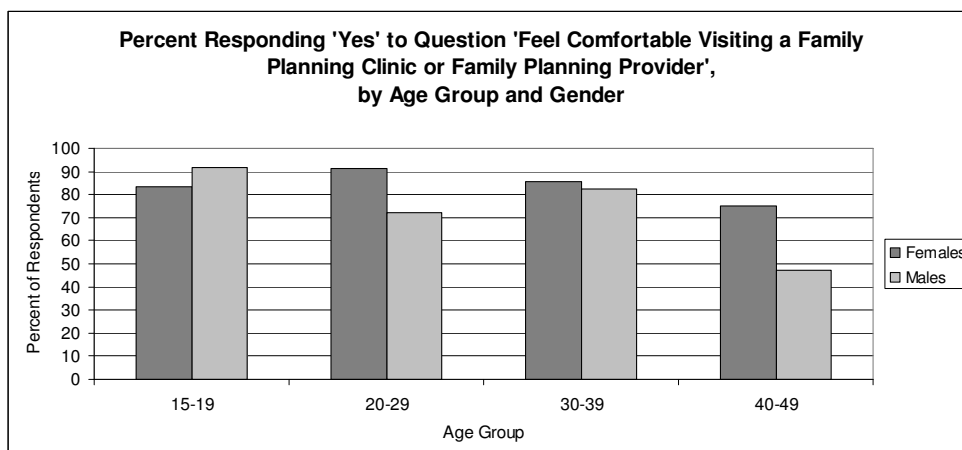


Figure 37. Percent of respondents that feel comfortable visiting a family planning clinic or provider, by age group and gender (the difference between females and males for the 20-29 age group is statistically significant at the 0.05 level; a lower number of respondents prevents the female/male difference for the 40-49 group from achieving significance).

40-49 are less likely to be comfortable visiting a family planning clinic or provider than are younger individuals (Figure 38; Appendix, p. 107). This reluctance is not substantial among respondents in their forties, however, as they report by nearly two-thirds that they are comfortable visiting a clinic or provider.

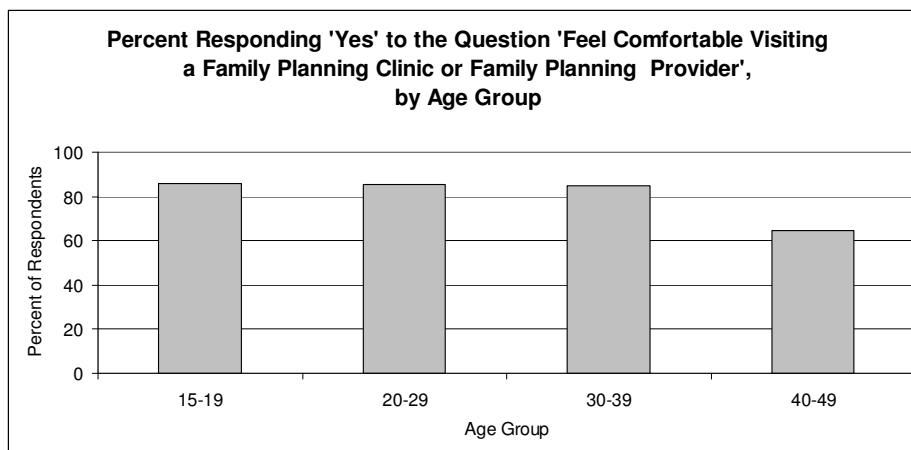


Figure 38. Percent of respondents that feel comfortable visiting a family planning clinic or provider, by age group (the difference between those aged 40-49 and other age groups is statistically significant – at the 0.01 level with respect to the 20-29 group, and at the 0.05 level with respect to the 15-19 and 30-39 groups).

There is also some discrepancy in respondents' proclivity to a visit to a family planning clinic or family planning provider when sexual experience is considered. Seventy-seven percent (77%) of those with sexual experience report that they are comfortable visiting a clinic or provider. This climbs to 88% among those with no sexual experience (the difference in these percentages is statistically significant at the 0.05 level). The high proportion (88%) of those with no sexual experience that are comfortable visiting a clinic or provider is largely an age-related phenomenon: 87% of these respondents that have no sexual experience are under age 25.

Finally, education is a factor in respondents' disposition towards visiting a family planning clinic or provider. Proportionally more individuals that have completed middle school or high school are comfortable visiting a clinic or provider than are those with an elementary-level education (Table 14). No significant differences are evident for other characteristics in the survey that were analyzed in the context of visiting a family planning clinic or provider (i.e., see tables in Appendix, pp. 110-111).

Table 14. Percent of respondents who are comfortable visiting a family planning clinic or family planning provider, by level of education (the difference between those with a primary education is statistically significant (at the 0.05 level) with respect to those with a middle or secondary education). Those with no education and a university education are excluded because there were too few in these categories.

Highest Education Completed	Percent who are comfortable visiting a family planning clinic or provider
Primary/Elementary	72.1
Middle School/Junior High	89.4
Secondary/High School	86.1

Attitudes towards Family Planning

The survey also assessed individuals' disposition towards the practices of waiting before a first pregnancy (delaying), permitting more time between pregnancies and children (spacing), and managing the overall number of children (limiting). This section of the paper reports the outcomes. These results are also cross-referenced with respondents' birth control awareness, use of a method, and their plans for use of a method.

Overall, there is a highly favorable view of these family planning practices. Eighty percent (80%) or better think delaying a first pregnancy, spacing pregnancies, and limiting family size are good practices (Table 15). Less than 10% believe it is a bad practice to pursue these behaviors, with a similarly small percent that were unsure or haven't thought about it.

Table 15. Respondents' attitudes (expressed as a percent espousing that attitude) towards the practices of delaying a first pregnancy, spacing between pregnancies, and limiting the number of children; includes all respondents.

Attitude	Delaying	Spacing	Limiting
It is a good practice	80.0	82.2	85.7
It is a bad practice	8.4	8.6	8.4
Don't know/Haven't thought about it	11.7	9.3	5.9

When individuals' attitudes towards family planning are juxtaposed with their understanding and utilization of birth control methods there is marked discrepancy. For instance, while 80% assert that delaying a first pregnancy with one's partner is a 'good practice', over 40% are not aware of any methods (Appendix, p. 49). Nor is this ignorance of birth control methods restricted to the young and inexperienced respondents. In fact, a lack of knowledge about birth control plays out in relatively equal proportions: 43% of those without sexual experience are unaware of methods and 39% of those with sexual experience are unaware of methods. The 80% that feel delaying a first pregnancy is a good idea think that a delay of 1-2 years is best (Figure 39; Appendix, p. 114).

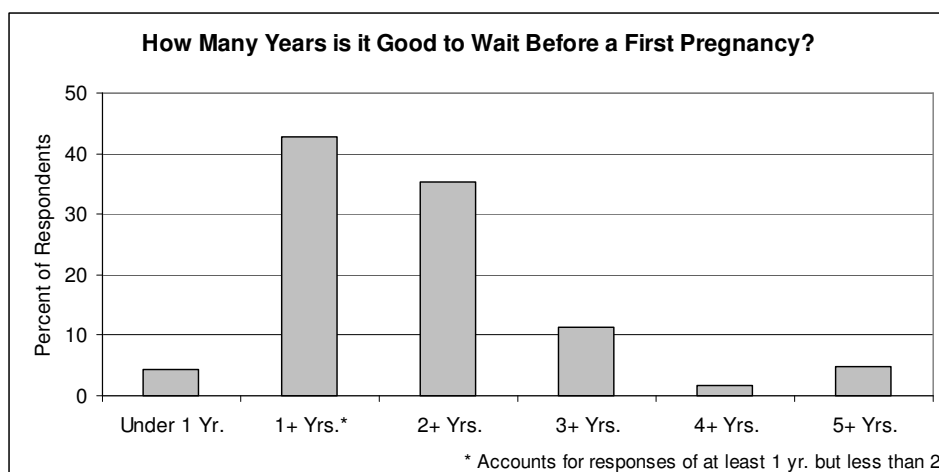


Figure 39. The number of years it is best to wait before a first pregnancy, among respondents that think it is a 'good practice' to delay a first pregnancy; the average years among respondents was 1.8.

Considerable disparity also exists between the high proportion (82%) of respondents who believe spacing pregnancies is a good practice and their relatively low rate of birth control use (Figure 40; Appendix, p. 116). Yet only 56% of these individuals have ever used a method and less than half of them (47%) that are currently using a method. Future plans for birth control usage are lower, with 40% who plan to use a method either within the next year or thereafter. Respondents who believe spacing pregnancies is a good practice report that it is best to wait nearly four years (3.8 years on average) between having children. Variation clearly exists in this timing, however, with responses ranging primarily between three and five years (Figure 41; Appendix, p. 117).

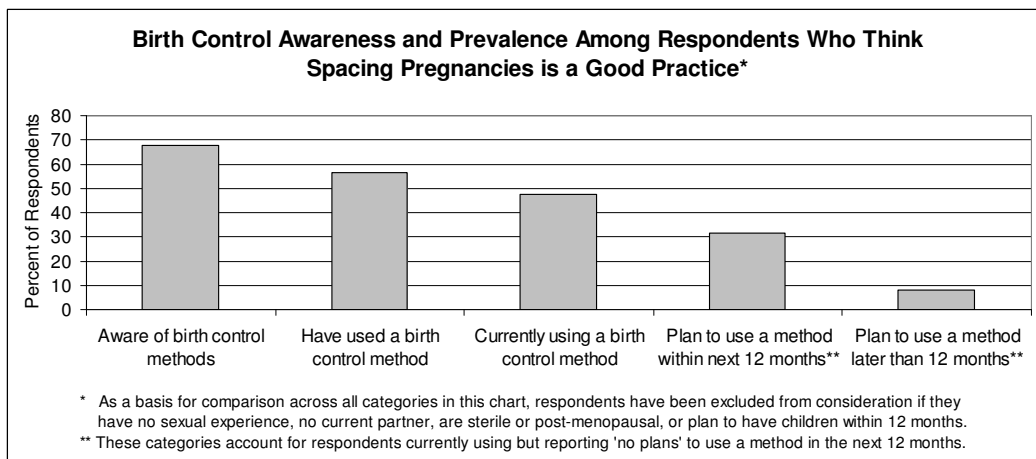


Figure 40. Birth control awareness and prevalence among the 82% of respondents who think it is a 'good practice' to space pregnancies. The difference between each category of birth control awareness and prevalence of use (i.e., have used, currently using, etc.), vs. those that think spacing pregnancies is a 'good practice' is highly significant, at the 0.01 level.

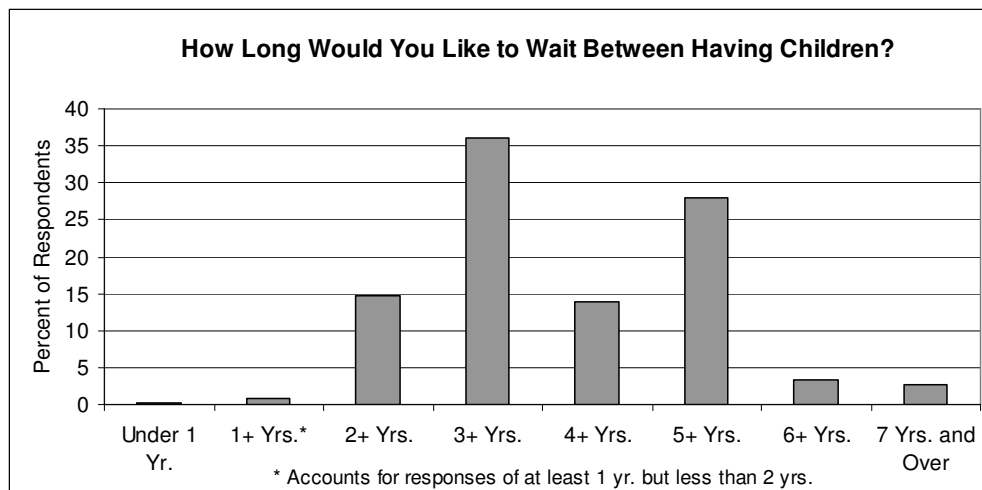


Figure 41. The number of years it is best to wait between children, among respondents that think it is a 'good practice' to space pregnancies; the average is 3.8 years.

When respondents were asked about their disposition to limit the number of children results were similar. Eighty-six percent (86%) believe this is a good practice but their birth control usage habits belie such intentions to limit family size (Figure 42; Appendix, p. 119). As in the case of spacing pregnancies, those that express a favorable attitude towards limiting

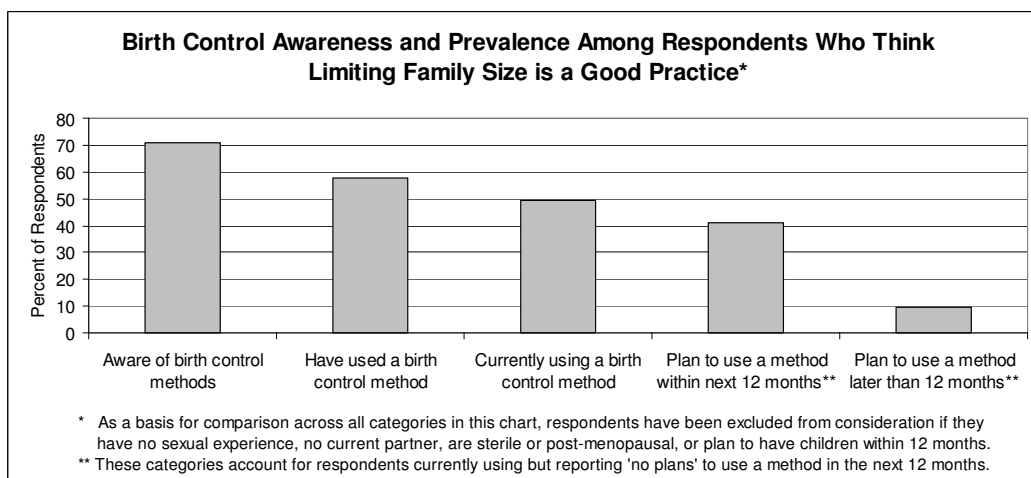


Figure 42. Birth control awareness and prevalence among the 86% of respondents who think it is a 'good practice' to limit family size. The difference between each category of birth control awareness and prevalence, vs. those who feel it is a good practice to limit family size is highly statistically significant, at the 0.01 level.

family size have used or currently use a birth control method at relatively low rates (near 60% and 50%, respectively). Rates for planned use are also modest, such that only 40% of respondents that believe it a good idea to limit family size plan to use a method within the next twelve months and under 10% plan to use a method after twelve months. Most individuals that claim it is a ‘good practice’ to limit family size would prefer between two and four children, with an average of 3.5 children (Figure 43; Appendix, p. 120).

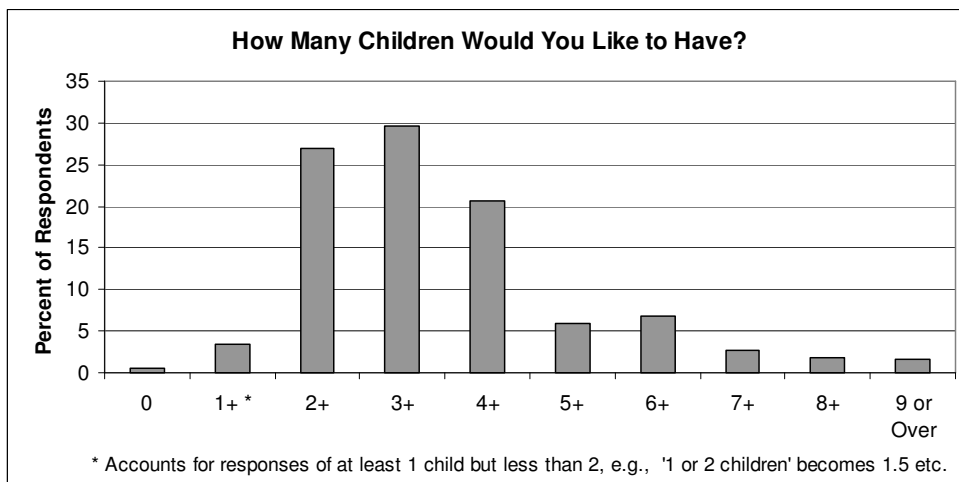


Figure 43. The number of children desired, among respondents who believe it is a ‘good practice’ to limit family size; the average is 3.5.

Finally, the survey asked participants to project their plans to become pregnant with their partner during the next twelve months. These results are also assessed in the context of birth control awareness and prevalence (Figure 44; Appendix, p. 122). Contradictory outcomes are evident here as well: 83% report no plans to become pregnant with their partner within the next twelve months but much smaller proportions currently use a birth control method (48%) or plan to use a method within a year (37%). Perhaps these contradictions should not be surprising because of similar inconsistencies just documented. However, this

question required respondents to move from broader notions of how they feel about the practices of delaying, spacing, or limiting to more personal and specific information about immediate plans with their partner. Outcomes are nevertheless consistent with those found for delaying, spacing, and limiting, in the sense that individuals' intents by and large contradict their practices. The magnitude of these dynamics – birth control awareness, past and current use of a method, and plans for use of a method – are consistent with those reported previously, for individuals in favor of spacing and limiting practices. The differences in all of these outcomes are highly significant at the 0.01 level. In other words and in all cases, practices (respondents' birth control prevalence and awareness) differ sufficiently from respondents' intent for delaying, spacing, and limiting such that there is a 99% likelihood that these differences did not occur randomly. So it is highly likely (99% likely) that an operative behavior or behaviors are associated with each of these differences.

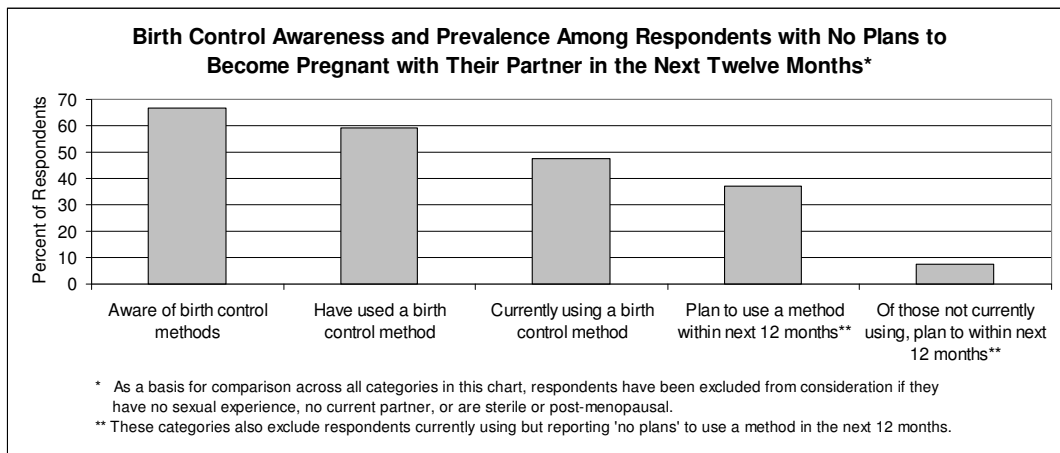


Figure 44. Birth control awareness and prevalence among the 83% of respondents who do not plan to become pregnant with their partner within the next twelve months. The difference between each category of birth control awareness and prevalence, vs. those with no plans to become pregnant is highly statistically significant, at the 0.01 level.

Conclusion

This survey has evaluated sexual behavior and fertility patterns along with family planning awareness, prevalence and attitudes in the largely Cakchiquel town of Comalapa, Guatemala. A geographically-representative sample of 425 questionnaires was administered to 420 households. Females are somewhat over-represented in the sample (as compared to their actual population) and males are under-represented. The time of day that interviews were conducted may have played a role, in addition to the fact that more men work outside the home and were perhaps missed at times. Because results by gender in this study did not dramatically differ, overall outcomes were likely not measurably affected. The impact was more noticeable when responses were disaggregated by gender as well as respondents' characteristics. In some instances this left fewer males than preferable to realize more conclusive results.

This research primarily aims to determine if an unmet need exists that may be addressed through appropriately delivered – or enhanced – family planning services. Unmet need is the percent of fecund women exposed to the risk of pregnancy who wish to wait at least two years before another birth or do not care to have any more children, but are not currently using a method of contraception.

The most important outcomes from this study confirm that a substantial degree of unmet need exists. Over 80% of individuals feel that it is a good practice to delay a first pregnancy, allow more time between children, and limit the total number of children. These high proportions suggest favorable attitudes towards family planning matters and were consistent across all three practices – delaying, spacing, and limiting. Despite these intentions, respondents that are potential candidates for use of a birth control method (those

with sexual experience, a current partner, not sterile, not post-menopausal, and with no plans to become pregnant) demonstrate somewhat low rates of birth control prevalence. Fewer than 60% of these ‘candidates’ have ever used a method, whereas under half currently use a method or have any plans to do so. Such disparity between intent and behavior establishes a clear requisite for education and services in the Comalapa community for family planning. A majority of individuals have at least some information about birth control: awareness among all respondents of any birth control method was 60%. Yet this leaves 40% who are unfamiliar with their family planning options, which suggests that education about contraception is an important component of any family planning services for this community.

Those that utilize contraceptive methods typically opt for injection, followed by the rhythm method, then female sterilization. Outcomes indicate that there is negligible use among Comalapa residents of the pill, intra-uterine devices (IUDs), and vaginal methods. Individuals most commonly access their birth control method at a health center (about a third of respondents report doing so). Alternative access points include private hospitals or clinics, volunteer promoters, and APROFAM clinics, though none of these enjoy widespread use.

Interestingly, the relatively limited use of birth control is only occasionally differentiated by respondents’ characteristics (i.e., gender, age, occupation, religion, household amenities). There are exceptions, however. Females without an occupation, for example, are less likely to use birth control. This warrants mention because over a fourth of women report they have no occupation. Education was also an exception and stands as the factor which most frequently differentiated fertility patterns, and awareness and prevalence of family planning. There is a pronounced increase in birth control awareness with each successive level of education completed. Those with more education have also used birth

control at higher rates, and they have a higher incidence of planned use of a method than do those with less education. Higher levels of female education are also clearly associated in this study with fewer pregnancies (more education was also associated with age at first pregnancy, though less substantially so, such that with each level of education for females, their age at first pregnancy increased by about one year). Ethnicity and literacy were infrequently used as indicators of trends; there were simply too few respondents that were not Cakchiquel Maya or not literate to achieve reliable outcomes based on variation in ethnic composition or literacy status.

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