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A comparative analysis of Indonesian and Philippino contraceptive determinants and use

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A COMPARATIVE ANALYSIS OF INDONESIAN AND PHILIPPINO CONTRACEPTIVE DETERMINANTS AND USE

by

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ABSTRACT

A Comparative Analysis of Indonesian and Philippino Contraceptive Determinants and Use

by

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This exploratory study investigates the contraceptive determinants affecting the variation behind different contraceptive use patterns in Indonesia and the Philippines. I analyze how much effect various determinants have on use patterns and whether these same determinants are relevant to a similar degree in both countries. Several demographic studies have indicated that while education and other socio-economic variables play a large role in contraceptive use, other factors are pertinent as well. Physical access in terms of distance to a facility or ease in reaching it is one concept. In addition, informational access via availability of mass media and the related function of literacy are important. Hopefully policy makers can utilize these findings to eventually increase access to contraception in areas where it is needed most.

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on the board that are of utmost importance...it's the game itself and how you play it. No one ever told me that before. I get it now. It's amazing and it takes my breath away. It's a mystery, really.

CHAPTER 1

INTRODUCTION

There has been dramatic progress over the past thirty years in reducing birthrates in developing countries, particularly in the areas of Southeast Asia. This is mainly the result of remarkable changes on the three fronts of contraception, health care, and cultural factors. While these facets work together in synchronicity, some theorists have speculated that the use of contraception has been a key element in these declines (Njogu 1991). The number of women in some developing countries using contraceptives has risen to more than fifty percent. According to U.N. estimates (1995), the fertility rate in Indonesia has fallen from 5.6 in 1965-70 to 2.9 in 1990-95. Additionally, in the Philippines it has gone from 6.0 in 1965-70 to 4.0 in 1990-95. Fertility rates, in this context, represent the measure of the "total fertility rate" (TFR), which is the average number of children born to women who survive to age 50 in a population (Hirschman 1994:205). Such reductions are staggering considering it took hundreds of years for fertility rates in the "developed" world to drop to such levels.

I selected the two countries of Indonesia and the Philippines for a variety of reasons. They both share similarities in economics and government as well as their physical topographies (island nations). Situated next to each other in the same region of the world exhibiting the above mentioned fertility declines, they also have religious and

cultural differences. The two countries currently have quite different fertility rates, 2.9 children per family in Indonesia with 4.0 children in the Philippines. This difference interested me and became the focal point of my study. Why such a difference? This thesis represents an exploratory study which investigates the disparate effects that contraceptive determinants have on the use of contraception in the countries of Indonesia and the Philippines.

Study Objectives

For the purposes of this thesis, while the demographic and socio-economic factors are indeed relevant and shall be addressed briefly in my research, more interest will be focused on the costs and motivations associated with contraceptive use. My research questions are based on statistical examinations of two data sets compiled through the Demographic Health Surveys of Indonesia and the Philippines (1993-1994). Relevant queries for this study include issues integral to availability and access to contraception and how these "costs" affect use. Not only are physical and economic access important here but informational access as well (in terms of literacy, mass media interventions, public service messages, etc.). My study objectives focus on the following questions:

(1) What are the differing levels of contraceptive use by women in both Indonesia and the Philippines?

(2) What effect does distance to a facility and ease of access to a facility have on the utilization of contraception in both countries?

(3) Do various transportation issues play an important role in the utilization of contraception in both countries? If so, are there different effects in both areas of study?

(4) What are the effects of informational access on contraceptive use? Variables of interest include education, literacy, acceptance of family planning messages through differing venues, as well as the source of family planning information itself.

(5) What are the differential effects of various demographic factors on contraceptive use (age, place of residence, religion, children ever born, highest educational level)?

A statistical analysis of the above mentioned contraceptive determinants is quite possible due to the enormity and breadth of interviews in the Demographic Health Surveys. The study of fertility regulation via use of contraception can be segregated into three main variable groupings: (1) Demographic factors such as age, duration of marriage, and number of living children; (2) Socio-economic characteristics including education, occupation, income, religion, and place of residence; and (3) Availability and accessibility of contraceptive use (Dalla 1991:739).

The results of such statistical investigations can possibly aid in further policy development of family planning programs in areas that need it most. I contend that physical access to contraception will play a significant role in utilization patterns (as seen in the literature, Chayovan et al. 1984; Gertler et al. 1994; Hossain et al. 1996; Shelton et al. 1976), especially due to the archipelagan nature of both countries as well as the various levels of development intra-regionally. Even though many studies have been done on the effects of such access, as well as the supply and demand of contraception and associated use (to be discussed in the Chapter 2 literature review), this study adopts a unique approach. The two countries of Indonesia and the Philippines are of interest for this study based on their physical topographies (as well as the previously mentioned issues

associated with fertility, economics, government, and cultural differences). It is my theory that if physical access to a contraceptive method is restrictive due to disparate placement of family planning facilities throughout the region as well as potential difficulties existing in reaching those facilities because of the physical layout of the two island nations, the patterns of use will reflect this.

While I additionally hypothesize that several of the demographic factors may not be as significant as others, religion will likely be a major indicator of use (as reflected in the literature, Herold et al. 1989; Knodel et al. 1998; Mistry 1999). Socio-economic characteristics will also probably be significant indicators of utilization, but like the demographic factors, may be highly correlated to usage (Ahmed 1987; Gertler et al. 1994). While the fertility rates have dropped significantly in both countries being studied, I predict the discrepancy between countries is much more than just one statistical analysis away from discovery. Indonesia's TFR is currently 2.9 while in the Philippines it is 4.0. Perhaps this research endeavor is the first step to understanding the complexities behind this enigma. My intention is not to suggest further fertility decline in the areas under scrutiny (many urban areas in Indonesia and the Philippines already have fertility levels close to replacement numbers, 2 children to 'replace' the mother and the father in the next generation), but to hopefully improve accessibility to women in the areas where unmet need is a serious concern.

Conceptual Considerations

It should be noted that in a search of the literature on contraception and contraceptive use, there appears to be no unified theories central to these themes. Theoretical and methodological tenets lean in either of two directions. First are the utilization studies focusing on contraceptive determinants, (factors which directly affect use of contraception) which include effects of socio-economic development as well as demographic characteristics. Second there are the psychosocial studies, detailing health seeking behaviors and the manners in which information is shared in social arenas These above mentioned studies will be further discussed in the following literature review chapter.

Despite the apparent lack of focal theoretical tenets in contraceptive usage studies, it is possible to borrow from a more macro set of literature on fertility itself. Here there exist several fertility theories to be discussed. For example, econometric theories (dealing with fertility as interpreted through an economic ideology), such as those introduced by Easterlin and Crimmins (1985), note that fertility behavior is a function of the three concepts of supply of children, demand for children, and regulation costs. It is specifically the issue of regulation costs that will be of interest in this study. Costs can include not only the monetary costs associated with buying contraception but other related factors such as distance to a facility, the costs inherent in transportation to and from the clinic, time constraints, as well as possible psychological factors involved (Hirschman 1994). Psychological costs of fertility regulation could include nonconformity with religious and moral beliefs, social disapproval and fear of sanctions, discomfort associated with

methods, fear about health problems and contraceptive side effects, anxiety over contraceptive failure, and so on (Ahmed 1987). These notions of cost will be central to the theoretical basis for this research endeavor.

Another theoretical perspective revolves around the proximate determinants of fertility, a notion introduced by John Bongaarts (1982). Fertility, as a conceptual framework, is directly related to the use of contraception through these "proximate determinants". These proximate determinants are "...the biological and behavioral factors through which social, economic, psychological, and environmental variables affect fertility. The distinguishing feature of a proximate determinant is its direct influence on fertility. If a proximate determinant, such as contraceptive use, changes, then fertility necessarily changes also...while this is not necessarily true for an indirect determinant such as income or education." (Bongaarts 1982:275-276).

Proximate determinants of fertility then include the following concepts: (1) Reproductive lifespan duration which takes into account age at marriage and marital disruption (affecting how many children are born within this timeframe); (2) The onset of sterility; (3) Rate of childbearing incorporating the duration of postpartum infecundability (the amount of time after a baby is born when a woman no longer ovulates and thus cannot get pregnant); (4) Fecundability (the monthly probability of conceiving among women who menstruate regularly but do not practice contraception); (5) Contraception (use and effectiveness); (6) Spontaneous intrauterine mortality (the death of an embryo in utero); and (7) Induced abortion (deliberate interventions to terminate a pregnancy) (Bongaarts 1982:278).

Some theorists such as Cain (1984), Caldwell (1986), and Smith (1986) deem social institutions of gender more important in influencing fertility instead of the positions of individual women. Alternative theories suggest that children are a potential source of social security, thus valuing more offspring, creating higher fertility rates. Caldwell (1982) feels, however, that children as a source of wealth relates to women's reproductive decision making and their power versus that of other family members or their mothers-in-law. He elaborates upon this concept in his pivotal work on the theory of "intergenerational wealth flows". In this theory there are only two stable fertility regimes, traditional societies where fertility is as high as possible and modern societies where childbearing is low (Bongaarts 1982). Other relevant factors for Caldwell include issues such as age at first marriage, gender preferences for children, the costs of children, as well as sociocultural, political, and economic constraints women deal with in their lives.

A final consideration is the work of Hermalin (1983), who presents a framework which has its origins in the work of Easterlin and others (1978). The model relates the levels of contraceptive use to various demographic and socioeconomic factors through a set of intermediary variables. The model indicates that the use of contraception is directly influenced by two types of factors: the motivation to use and the costs of use. All the other factors influence use only through these two types of factors. In other words, socioeconomic and demographic factors do not directly affect fertility regulation (via contraceptive use). Instead, they affect motivation and costs and their relation to fertility regulation depends mainly on these links. The costs of fertility regulation, per the Easterlin framework from which Hermalin bases his theoretical leanings, include economic

costs of time and money, social opinion costs (possible violation of social norms and potential stigma), and health and psychological costs (including health risks and medical side effects) (Dalla 1991).

Thus, for the purposes of this research, it is my intention to investigate the use of contraception as a proximate determinant of fertility as defined in Bongaarts' model as well as integrating Easterlin and Crimmins' notion of regulation of cost. While Hermalin incorporates many of the tenets regarding costs associated with contraceptive use as discussed by Easterlin, I disagree with his notion that socioeconomic and demographic factors do not exert a direct influence on use. The above mentioned theoretical studies will additionally inform my choice of demographic and socioeconomic variables to be used in the statistical analyses.

I now will present an overview of relevant literature in the field of fertility and contraceptive behaviors. Chapter 2 delves into the relevant literature in the field; Chapter 3 describes the historical evolution of the Demographic Health Surveys, the study setting, the data, and my methodologies; Chapter 4 entails comparative univariate descriptive statistical analyses of both the Indonesian and Philippino Demographic Health Survey data; Chapter 5 represents the bivariate tests of significance; Chapter 6 discusses the comparative logistic regressions; and Chapter 7 relates my summary and conclusions.

CHAPTER 2

LITERATURE REVIEW

This chapter will investigate relevant literature in the field of contraception and fertility behavior studies. The theories of fertility will not be discussed in this venue due to its coverage in the previous chapter. As noted, the studies in contraception and fertility generally fall under two main categories: (1) empirical studies emphasizing utilization and its associated determinants, and (2) psychosocial studies involving the manners in which users "cognitively" seek out information about various family planning methods, the extent to which they share such knowledge, and how they incorporate these aspects into their own senses of "reproductive selves".

Empirical studies can further be segregated into: (1) Physical accessibility concerns affecting contraceptive use; (2) Religious issues and their roles; (3) Education's affect on use; and (4) Studies emphasizing Easterlin's framework of supply, demand, and cost. Psychosocial studies include: (1) Social learning and information access; (2) The Reproductive Health Awareness Model; and (3) The Health Belief Model. These theories and models will be discussed further in the literature review itself.

Empirical Studies

Empirical studies, as a whole, constitute the majority of contraceptive use and fertility literature. Much of the theory surrounding these issues is based on the findings of many of these preliminary studies, beginning as early as the 1960s (further historical developments to be introduced in Chapter 3). I will begin with a grouping of pertinent research which focuses on physical access and its effect on contraceptive utilization since this is a core concept in this thesis. An additional area of relevance is that of the religious studies, which will follow. Educational effects on contraceptive use will be next, followed lastly by a collection of studies pertaining to Easterlin's framework of the various costs of contraception and affiliated concepts of supply and demand.

Physical Access and Utilization Research

Central to part of my hypothesis is the concept that distance, time, and ease of access are directly related to the use of contraception. Many studies show this to be the case. However, findings are not universal and the research tenets vary from project to project.

A pertinent study by Shelton, Brann, and Schulz (1976) discusses the impact of travel distance upon abortion use. The authors introduce their argument based on findings from a New York study done in 1970 and 1971 showing that the greater distance from New York, the lower the utilization of the state's abortion facilities. They specifically look at this issue in light of the U.S. Supreme Court's 1973 abortion decisions which increased the use of abortion in the United States markedly (Shelton, Brann, and Schulz

1976). The authors, however, are investigating the effect of travel distance on the use of abortion facilities in areas of Georgia. Employing bivariate linear regression, they discover that the farther a woman has to travel to obtain an abortion, the less likely she is to obtain one. There exists a disparate effect though between the lower socio-economic niches and higher ones. While older, more affluent and better informed teenagers (such as college students) may have relatively little difficulty traveling considerable distances to acquire abortions (and may prefer to do so to maintain anonymity); younger, less affluent, less informed teenagers' motivations tend to reflect the authors' conclusions about distance having a negative effect on abortion use (Shelton et al. 1976).

Studies specifically honing in on accessibility issues include Mroz, Bollen, Speizer, and Mancini (1999) with their "Quality, Accessibility, and Contraceptive Use in Rural Tanzania". Using ordinary least squares (OLS) regression, they include two types of availability measures from community informants: (1) the standard proximity measures of travel time and distance to a family planning facility, and (2) perceptions of accessibility that may capture some of the nongeographic proximity issues (Mroz et al. 1999:23). These secondary measures include accessibility (on a 5 point scale with 1 representing total inaccessibility and 5 indicating complete accessibility), ease of access, and impression (5 point scale as well, with 1 meaning poor quality and 5 reflecting very good quality) (Mroz et al. 1999:26). The authors conclude that the perceived quality of a family planning facility is a more important determinant of contraceptive use than any of the accessibility measures, provided that there is a facility within 30 km of the village (Mroz et al. 1999).

A final consideration in this area of physical accessibility studies is the work of Chayovan, Hermalin, and Knodel (1984). They agree that availability is viewed as a limiting condition in the sense that either a particular contraceptive method is or is not available, while accessibility is a matter of degree (Chayovan, Hermalin, and Knodel 1984). Measures of accessibility in their study include: distance to a specific outlet, travel time to an outlet, types of services provided, length of time that services and outlets have been available, convenience in terms of ease and costs of transportation, quality of service, and costs of family planning services (Chayovan et al. 1984). The authors do not include the last three measures in their analysis. Running several correlation matrixes, they reveal that the majority of accessibility indexes are highly correlated with distance. The study concludes that there is a need for more attention in the measurement of accessibility, quality of services provided, and the extent of information, education, and communication efforts in this area (Chayovan et al. 1984).

Shifting now to concerns of community measures of contraception availability, a study by Tsui, Hogan, Teachman, and Welti-Chanes (1981) shows that availability, in this context, is measured in terms of the distance to contraceptive service outlets, then categorized into high, medium, and low distances. With a dependent variable of current contraceptive use and independent variables of distance, parity (number of children a woman has given birth to), duration of marriage, women's education, and a constructed measure of community development (ranging from high to low), the authors applied a multiple regression model for their statistical analysis (Hogan et al. 1981:618). They go on to conclude that women who reside in communities with better availability of

contraceptive services have higher rates of contraceptive use. The differential between community and individual levels of reporting of contraceptive availability is of importance in this study and has thus been analyzed accordingly (Hogan et al. 1981).

Other studies include Rodriguez (1979), in his review of World Fertility Survey data. The dependent variable of use of contraception is again prevalent, with independent variables of perceived travel time to a family planning outlet, means of transport, perceived distance to the outlet, and knowledge of such an outlet. The authors' conclusions indicate that the use of contraception (at the time of the study) increases as perceived travel time to the nearest outlet decreases. However, this relationship is weakened after controlling for type of place of residence and education. Thus, the greater likelihood of use among women who know an outlet nearby is partly explained by their tendency to be urban (Rodriguez 1979).

Additionally, Degraff, Bilsborrow, and Guilkey (1997) investigate the use of contraception combining both individual as well as community level data from the Philippines in "Community Level Determinants of Contraceptive Use in the Philippines: A Structural Analysis." This allows them to possibly identify significant effects of community factors on contraceptive use and to delineate further the processes through which these factors influence individual behavior (Degraff, Bilsborrow, and Guilkey 1997). The current number of living children, desire for an additional child, and current use of contraception act as dependent variables. Individual independent variables include age, education, husband's education/occupation, land value, FP travel time and FP visits (by a FP worker). Community variables consist of distance, roads in the area, FP clinic in

area, FP worker in area, child/female/male wage, and whether a women's organization exists in that particular community (Degraff et al. 1997). Their findings indicate that outreach has decreased over the years in the Philippines due to shifting governmental policies and that an outreach component focusing on family planning is more effective in increasing contraceptive prevalence than are family planning clinics per se (Degraff et al. 1997). Many of the independent factors relating to wage earnings show that children are seen as an asset in this society.

A final study of interest in the area of physical access to contraceptive methods is that of Entwisle, Hermalin, Kamnuansilpa, and Chamratrithirong (1984). Looking at village level measures of actual availability rather than respondent perceptions of availability, the dependent variable is again, use of contraception, with independent variables of years of schooling (categorized into three levels), desire for more children, and age of respondent. Descriptive statistics are originally produced to analyze the disparate effects of the independent variables on the dependent variable, eventually coalescing into a multivariate logistic regression model. These analyses supported the hypotheses that availability increases the likelihood of using contraception and that availability enhances the effect of a desire for no more children on the chance of use. However, the hypothesis that availability weakens the positive relationship between education and the odds of use is not supported in this case.

All of the above mentioned studies reinforce the notion that physical access to and availability of contraception is a significant indicator of use. While the studies varied across time and place, this finding remained a constant in all conclusions. My theoretical

questions integrate these two aspects looking at the common variables of distance to a facility, time to facility, mode of transportation, and ease of access. I believe that my findings will closely replicate those of the others and reaffirm that policy makers need to strongly consider physical distribution of clinics as a focal point within their developmental regimes for family planning programs.

Religion and Contraception

The ethics of birth control have always been a topic of debate. All of the world's major religions endorse responsible parenthood, but when it comes to methods, the consensus often dissolves. The issues of birth control, abortion, and fertility procedures are critical for Catholics today, and all three are colored by the Roman Catholic Church's attitude towards sex and sexuality. The Church has so frequently spoken out about these matters that its teachings on sex have become a major way that the Church has defined itself in the twentieth century. As recently as 1995 Pope John Paul II condemned artificial means of birth control, abortion, and fertility procedures outside of sexual intercourse as gravely immoral and part of the culture of death (Ryan 1998). Hindu and Buddhist teachings are linked by a belief in reincarnation, but this has not been extended to an obligation to achieve maximum fertility. The Buddhist religion requires abstinence from any form of killing, and strict Buddhist groups have interpreted this requirement as support for opposition to contraception. In the Muslim religion, the Prophet Mohammed endorsed the use of coitus interruptus for socioeconomic reasons and to safeguard the health of women. In general, modern methods of family planning have been accepted by

Islamic religious leaders, although sterilization is resisted and seen as mutilation. Some fundamentalist Islamic groups, however, have opposed family planning (McHenry 1992; Goulka 1998).

The literature in this section then will investigate certain religious tenets towards birth control in the above mentioned religions. Specifically, studies have been selected which discuss Catholicism and fertility (in Puerto Rico), and Muslims and reproduction (in both Thailand and India). While other religions show up in the Demographic Health Surveys in both Indonesia and the Philippines, bibliographic searches along these lines came up with little to no relevant findings. The majority of studies done on fertility and religion then seem to focus either on Catholicism, Muslim/Islamic, or Buddhist undertones as a theme.

Herold, Westoff, Warren, and Seltzer (1989) investigate the role of the Catholic religion on fertility. Specifically, they examine the association between fertility and religious affiliation among Puerto Ricans using Bongaarts' proximate determinants framework. In this context, Bongaarts models four proximate direct determinants of fertility as nuptiality, contraceptive use, lactation, and abortion. This particular study looks at the first three of Bongaarts' variables, comparing the prevalence factors of Catholics with non-Catholics. Measures of fertility used are: (1) the mean number of children ever born; and (2) total fertility rate, defined as the average total number of births a woman would have if she were to pass through her reproductive lifetime experiencing the age-specific fertility rates of a given time period (Herold et al. 1989:1259). Their final

discussion reveals that contraceptive use is markedly similar for Catholics and non-Catholics of Puerto Rico. While differences do exist, they are minimal.

In another study by Knodel, Soottipong Gray, Sriwatcharin, and Peracca (1998), "Religion and Reproduction: Muslims in Buddhist Thailand," a contrast is examined between Muslim reproductive attitudes and behaviors in Thailand and those of Buddhists. Social scientists have long recognized that religion plays a major role in reproductive attitudes and behaviors. High leveis of fertility characterize the majority of Muslim communities, although in some, fertility levels have declined. Thailand presents an interesting case due to its total fertility rate having dropped from over six to about two births per woman over the last few decades and contraceptive prevalence among married reproductive aged women exceeding 70 percent by the 1990s (Knodel et al.1998). The predominance of Theravada Buddhism is considered an important aspect of the Thai setting that facilitated reproductive change. The link between religion and fertility decline via Buddhism's influence on the dominant Thai value system is discussed extensively in prior research (Knodel, Chamratrithirong, and Debavalya 1997), but far less analysis has been done on the disparate reproductive patterns of the Muslim society (Knodel et al. 1998).

The data used for this particular study came from the 1994 Survey of Knowledge, Attitude, and Family Planning Practice in the Southern Region of Thailand conducted by the National Statistical Office (NSO). The stratified clustered sample of single and married women aged 15-49 consists of both urban, semi-urban, and rural areas. Logistic regressions were run to determine the effect of several demographic variables on

contraceptive use. Age, level of education, place of residence, employment, and type of occupation were prominent variables of interest. Additionally, focus interviews were conducted presenting questions on attitudes towards contraception (Knodel at al. 1998).

Three main religious groupings are investigated for the purposes of this study: Thai speaking Muslims, Malay speaking Muslims, and Buddhists. Starting around 1970 when modern contraceptives use in Thailand began to increase rapidly, studies consistently found lower contraceptive prevalence among Muslims than Buddhists (Jones and Soonthornthum 1971; Chayovan and Knodel 1984; Kamnuansilpa, Chamratrithirong, and Knodel 1983; Knodel, Charmratrithirong, and Debavalya 1987; and Chayovan, Kamnuansilpa and Knodel 1988) (Knodel et al. 1998:9). Given the special status of contraceptive methods in Muslim doctrine (Obermeyer 1994) and previous findings that Muslims in Thailand have a particular aversion towards such methods, current use of sterilization and of non-permanent methods are studied separately in the project.

Unfavorable attitudes towards contraception, stemming from the belief that the use of contraception is contrary to Islam, is an important factor in accounting for lower contraceptive practice among Muslims, in comparison to Buddhists. When asked specifically if contraception is against their religion, almost three-fifths of Thai speaking Muslims and almost 90 percent of Malay speakers answered affirmative. Virtually no Buddhists said they disapproved of contraception. Additionally, no Buddhists cited a religious reason for non-use. In contrast, religious objections account for almost half of non-use among Thai speaking Muslims and two-thirds of non-use among Malay speakers.

There is a clear consensus that family planning, with any modern methods and particularly sterilization, are against Moslem (Muslim) doctrine (Knodel et al. 1998).

Currently on a Thai national level, Buddhist fertility is at replacement rates (2 children) and contraceptive use virtually universal. In contrast, Muslim fertility is substantially higher and contraceptive use much lower, especially for permanent methods. Lack of knowledge as well as access to contraceptive services can both be ruled out as possibly accounting for religious differentials in contraceptive use. According to a 1994 National Statistical Office (NSO) survey, among Buddhist and Muslims alike, virtually everyone knew of at least one method and over 90 percent knew at least 3. Another relevant factor is that the availability of contraception is widespread through an extensive network of government service points (Knodel, Chamratrithirong, and Debavalya 1987).

A final study discussing the role of religion in fertility behaviors and family planning is by Mistry (1999). Mistry begins by stating "According to Westoff, the religious affiliation of the couple connotes a system of values which can affect family via several routes: (a) Directly, by imposing sanctions on the practice of birth control or legitimizing the practice of less effective methods only, or (b) Indirectly, by indoctrinating its members with a moral and social philosophy of marriage and family which emphasizes the virtues of reproduction." (Mistry 1999).

The study objectives stated in this particular research endeavor included the following: To find the level of fertility and family planning among Muslims in the study area of Malegaon (in the Nashik district in India); to find the degree of religiosity and its influence on fertility and family planning; to ascertain the level of modernization and status

of Muslim women and their influences on fertility and family planning; and finally, to find the attitudes and perceptions of leaders of the community on issues related to population, family planning, and the family norm among Muslims in general (Mistry 1999:4).

Using a combination of descriptive analyses as well as multivariate logistic regressions, this study exhibits the following statistics. Of the currently married women in the study, 32 percent were found to be 'ever' users of contraception. Among the current users, only 25 percent were current and 7 percent were past users. The literacy level in the population at large is relatively high with 83 percent of the males and 76 percent of the females being literate among Malegaon Muslims. Many of the women favored equal education for girls as well as economic independence for women. The majority of women interviewed were in favor of arranged marriages (Mistry 1999:11, 17).

Many Muslims still believe that Islam does not allow for the use of contraception. However, of those who read the Quran and Hadees (holy texts), 64 percent said that there is no command against family planning while only 2 percent affirmed. 34 percent didn't know. Women with high religiosity are expected to exhibit high fertility, which was observed among Catholics (Blake 1984). Among Muslims, high religiosity may be even more strongly related with high fertility, as orthodox Muslims are usually conservative due to their tenacity to hold to old beliefs and practices (Kirk 1973). However, in this study's findings, for Malegaon Muslim women, fertility was lower among women with high religiosity than among women with medium religiosity. In the study's concluding statement, "Religion does not seem to explain their high fertility and low family planning

acceptance while modernization and status of women seem to be important in explaining their high fertility and low family planning acceptance." (Mistry 1999:28).

It is noteworthy that the same religion in different parts of the world can exert differential effects on fertility and contraceptive behaviors. Additionally, for the purposes of my research objectives, I predict that the religions of both Indonesia and the Philippines will be strongly significant in relation to contraceptive use patterns. Further descriptive statistics (to be discussed in Chapter 4) will exhibit a clearer picture, but the majority of those women interviewed in the Philippines are Roman Catholic, while in Indonesia the majority are Muslim.

Education and Contraception

The literature surrounding contraceptive and fertility behavioral studies and their associations with education has a long history (originating in the 1960s). Results from more current research continue with similar results: Education maintains a high positive correlation with contraceptive use and lowered fertility rates. While there are rare exceptions to this phenomenon, the pattern still holds after more than 40 years of research in the field.

One such study, by Martin (1995), "Women's Education and Fertility: Results from 26 Demographic and Health Surveys," confirms this trend as well. Yet it is relevant to note that considerable diversity exists in the magnitude of the gap between upper and lower educational strata and in the strength of the association. Additionally, up until the mid 1970s, this view was held universally. However, an extensive review of the available

empirical evidence showed that the expected inverse association was not found in many poor, mostly illiterate, rural societies. Instead, an inverted U-shaped relationship was documented in some developing countries. A growing awareness of the complexities involved with education and fertility led to a change in the focus of research. Interest shifted more from mere descriptive statistical associations to an exploration of the direct and indirect channels through which education influences reproductive behavior. In the search for mediating mechanisms, attention was primarily focused on the proximate determinants of fertility (Bongaarts 1978). The new trend of research surveys, mainly the Demographic and Health Surveys, incorporates this new ideology (Martin 1995).

School then provides literacy skills, enables pupils to process a wide range of information, and stimulates cognitive development. Schools are also important agents of socialization, with a crucial role in shaping attitudes, opinions, and values. Exposure to new ideas and alternative lifestyles might lead a person to question traditional norms and practices. All these educational assets have a pervasive influence on women's lives, shaping both their productive and reproductive lives (Martin 1995). While this study of 26 Demographic and Health Surveys investigates fertility differentials by education, nuptiality, fertility preferences, and patterns of fertility regulation, for the purposes of this thesis, I am interested more in the patterns of fertility regulation. She begins with descriptive analyses and finally incorporates a multivariate logistic regression to test for the specific effects education has on the above mentioned fertility measures in the 26 countries being discussed.

Earlier studies documented extensively the positive association between female education and contraceptive use (United Nations 1987; Rutenberg et al. 1991). Better educated women are more likely than others to desire smaller families and thus have a stronger motivation to practice contraception. Educated women are also less likely to have a fatalistic attitude towards life and to accept the unpredictability of unregulated fertility. By enhancing women's position within the family authority structure, education also improves women's control over reproductive choices. Educated women are also better informed about available contraceptive options and sources (Martin 1995). Despite the variation across cultures, a trend emerges where the better educated women surveyed display the highest rates of contraceptive use in every country. Except for Indonesia, differentials in contraceptive use by education are relatively small in the Asian countries examined (Martin 1995). This discrepancy mentioned (in Indonesia) will be further explored in my upcoming statistical analyses in Chapters 4 and 5.

Educational differentials are small in countries with low fertility and high contraceptive prevalence rates, such as Sri Lanka and Thailand. Cross national comparisons of the data also reveal that contraceptive use rates among uneducated women in more developed societies are usually higher than contraceptive use rates among highly educated women in less developed countries. This pattern implies then that the impact of education, while pervasive, is not identical in each society. Also, other sources aside from the formal schooling system are operating as channels of communication and networks of diffusion of contraceptive knowledge and behavior (Martin 1995).

Final conclusions for this study suggest that women's education does not have identical repercussions in every society but is conditioned by socioeconomic development, social structure, and cultural context, as well as by a society's stage in the fertility transition. In general, the impact of an individual's schooling on reproductive behavior is weak in poor, mostly illiterate societies, grows stronger as societies improve their overall education and advance in their fertility transition, and becomes less prominent once a relatively low level of fertility has been reached (Martin 1995).

Other studies that recognize the impact of education on women's fertility concentrate on areas of Southeast Asia. First there is Gertler and Molyneaux's work (1994). Their investigative efforts cover fertility reductions from the years 1982 to 1987. They used data from both the 1987 National Indonesian Contraceptive Prevalence Survey (NICPS) as well as DHS data. Following the Bongaarts proximate determinants framework (discussed earlier in other studies), independent variables consist of age, marital status, children ever born, education, wages earned, developmental measures (amount of paved roads per region), and the amount of visits to a family planning facility. Beginning with descriptive statistics they eventually develop multivariate logistic regression models to explain the fertility decline over these years (Gertler and Molyneaux 1994).

The effects of education on contraceptive use follow normal patterns of higher use among higher educational groups; the largest differences are found between those who have not completed primary schooling and those with primary schooling and above. Although the contraceptive prevalence rates are highest among those with the highest

levels of education, residual birth hazards are also the highest among those with the most education. Apparently more highly educated women are more likely to use contraception, but also are more likely to conceive when they do not use. Partial explanations may be found in breast-feeding patterns; mothers with high education tend to initiate breast-feeding less and to breast-feed for shorter durations (Iskandar, Costello, and Nasution 1991). Because breast-feeding inhibits the return of ovulation postpartum, exposed women with high education who do not breast-feed can be expected to conceive sooner (Gertler et al. 1994).

Their conclusions indicate that 75% of the fertility decline in the region resulted from increased contraceptive use alone, but this was induced primarily through economic development and improved education and economic opportunities for females. Together with marriage it explains 92% of the fertility decline in Indonesia (Gertler et al. 1994). Additionally, improvements in females' educational attainment and in males' and females' wages were responsible for 45 to 60% of the decline; most of the impact acted through contraceptive use. Finally, 87% of the increase in contraceptive use was due to changes in education and wages (Gertler et al. 1994).

The last study relevant in this context is from Hirschman and Guest (1990). As with the previous article discussed, the authors here examine the reductions in fertility rates over a time period. Yet in this case, Hirschman and Guest compare the rates from 1970 to 1980 in the four countries of Indonesia, Malaysia, the Philippines, and Thailand. Their data emerge from microdata samples from eight population censuses from the four countries (two for each country). The censuses were conducted in 1970 and 1980, except

for Indonesia where the dates are 1971 and 1980. The two dependent variables under analysis are children-ever-born (CEB) and current fertility. CEB, the cumulative number of live births, is available for all ever-married women in each census. The indicator of current fertility represents all children aged one to four for each respondent (matching infants and children with a woman, the identified or presumed mother) in the same household. On the basis of these surviving children, the authors have computed age-specific fertility rates for the periods 1965-1969 (using the 1970 census) and 1975-1979 (using the 1980 census) (Hirschman et al. 1990).

The analyses indicated significant fertility declines in all four countries. Most of these fertility declines, however, represent decreases in marital decline among women in the peak childbearing years. Given the extremely rapid rise in educational levels in Southeast Asia, Hirschman and Guest expected that the education component would account for a major share of the fertility decline in the four countries. Only Malaysia and the Philippines provided support for such an expectation. In Malaysia, educational composition accounted for a decline of about 40% of the overall decline from the late 1960s to the late 1970s. For the Philippines, education was responsible for 38% of the reduction. The shift in educational composition in Indonesia exerted a slight upward pressure on fertility as the education-fertility relationship did not follow the expected negative slope (Hirschman et al. 1990).

The patterns of fertility decline within categories of educational attainment fall into two distinct types. The first type, exemplified by Indonesia and the Philippines, shows the greatest fertility declines occurring in the upper middle range of the educational

distribution (in all except the highest category in Indonesia). In the other pattern, which describes the case of Malaysia and Thailand, the largest fertility declines occur at the lowest rungs of the educational ladder. In countries where the fertility transition was in its early stages and there was a weak and inconsistent relationship between education and fertility (note curvilinear relationship between the two in Indonesia and the Philippines), the greatest fertility decline is among highly educated women. On the other hand, in Malaysia and especially Thailand, the fertility transition was well established by the late 1960s and a strong negative relationship already existed between these two factors. In these settings, the diffusion of low fertility norms and greater access to birth control reached the entire society in the 1970s, including the traditionally high-fertility groups. There appears then to be less of a fertility differential between the low and middle educational categories in Malaysia and Thailand. However, the Philippines and Indonesia still seem to be in the initial stage of their fertility transitions, and with the greatest declines in the 1970s being among women with secondary and tertiary education (Hirschman et al. 1990).

It appears then that education still does maintain, in a general sense, a positive correlation with contraceptive use and a negative one with fertility rates. While exceptions do exist, such as the above mentioned patterns of fertility reduction in Indonesia and the Philippines, the positive relationship shall retain a stronghold in fertility research in the future. For the purposes of this thesis, education is hypothesized to play a significant role in the use of contraception and fertility patterns. However, while the data in the above mentioned study comes from the 1970 and 1980 censuses, my data for

Indonesia and the Philippines are based on DHS findings from 1993 and 1994. It will be interesting to note what changes have occurred over that time differential.

Supply, Demand, and Cost

A discussion of fertility and contraceptive use would be errant without integrating issues relating to supply, demand, and costs of contraception. While some of the literature centers entirely on Easterlin's "synthesis framework" of fertility determination (as discussed in the previous chapter), others incorporate supply, demand, and cost as variables themselves in the research projects. This area of the literature review will begin with a study incorporating the Easterlin synthesis framework, moving on to empirical studies discussing concepts concerning supply, demand, and cost in relation to contraceptive use.

Ahmed (1987), in his article "Determinants of Contraceptive Use in Rural Bangladesh: The Demand for Children, Supply of Children, and Costs of Fertility Regulation," contemplates the use of contraception as well as the intention to use directly through Easterlin's synthesis framework. Studies on contraceptive use most often look at three variables; motivation, attitudes, and access, as the key determinants. Motivation stems from having too many children or having them too soon. Individual motivation depends on both individual background and the nature and success of national population policy. Attitude refers to broad notions of the acceptability of family planning in general and feelings about specific contraceptive methods. Access pertains to the availability of contraceptives and related services. Easterlin then formalized these variables in terms of

three concepts: (1) the demand for surviving children; (2) the potential output of living children in the absence of contraceptive use; and (3) the costs of fertility regulation (Ahmed 1987).

Using data from the Bangladesh WFS (World Fertility Survey, Bangladesh, 1978), the author went on to explore various demographic variables in addition to Easterlin's concepts as introduced above. Demand for children was presented in relatively simple terms as a question posed in the WFS (how many children would you like to have in your whole life?). The supply of children was represented in the WFS by the following: age at first birth, second birth interval, interval from the second birth to current age, duration of breastfeeding in the last interval, pregnancy wastage (a measure of spontaneous intrauterine mortality), and child mortality. Finally, the costs of regulation, in this context, normally would include time and money spent on acquiring contraceptive methods as well as psychological costs including nonconformity with religious and moral beliefs and social disapproval. However, the author states that the Bangladesh WFS did not collect sufficient information on costs, so for the purposes of his study, he uses distance to family planning clinics as an indicator of costs (Ahmed 1987).

Utilizing logistic regressions with the above mentioned variables, the findings indicate that decreasing the distance to family planning clinics increases the prevalence rate or intention to use contraception. As for desired family size, giving a numerical answer rather than a fatalistic one increases the probability that contraception is used. Additionally, education plays a significant role in the intention to use. The author then concludes by stating that further attention should be given to collecting information

pertaining to both market and psychological costs of fertility regulation, desired family size of the couple, and to fertility related behaviors in general (Ahmed 1987).

Another relevant study by Boraie, McCarthy, and Oruch (1988) additionally incorporates the Easterlin synthesis framework. Looking specifically at the demand for children, the authors delineate this aspect into five categories: (1) Economic costs and benefits of children; (2) Opportunity costs (what the individual must give up in life to have children); (3) Tastes/personal preferences; (4) Income and wealth; and (5) Previous childbearing and life cycle stages (where one considers themselves in their life at that particular point in time) (Boraie, McCarthy, and Oruch 1988).

The data were obtained from the Egyptian Fertility Survey with a total of 8,788 women being interviewed. Further analysis includes determinants of family size desires which has two parts. First they consider four dependent variables (the percentage who say they desire no more births, the mean number of additional children desired, mean desired total family size of the wife, and of the husband, based on answers supplied by the wife) together with a comprehensive list of demographic, socioeconomic, and attitudinal variables. A bivariate analysis is run for each grouping with a multivariate logistic regression following (Boraie et al. 1988).

Determinants of contraceptive use are also regarded in similar analyses. Three dependent variables are correlated with many independent variables similar to those used in the previous example. Dependent variables here include the percentage of women ever using any method of contraception, the percentage of women ever using any efficient

method (oral contraceptive, IUD, condom, sterilization), and the percentage of women currently using any method of contraception (Boraie et al. 1988).

Conclusions indicate that five variables were significantly related to fertility desires. Income effects (significant negative effect to total desired family size); the level of education desired for daughters (significant negative effect to fertility desires); previous childbearing experience (positively associated with fertility desires); coefficients for living daughters indicating son preference in the area; and the expectancy of parents to rely on their children as a source of support and alternate support (not consistently related to fertility desires). Fertility desires were found, in turn, to be significantly associated with contraceptive use, even after all other factors had been controlled for. Women whose desired family size was greater than their number of living children, indicating a desire for more children, were significantly less likely to be using effective contraception than those women whose desired fertility was less than or equal to their actual fertility. This finding suggests that Egyptian women do alter their contraceptive behavior in response to fertility desires (Boraie et al. 1988).

A final study by Jayne and Guilkey (1998) examines the relative importance of access and supply of family planning and the motivations to restrict fertility which determine contraceptive use in the three countries of Colombia, Tunisia, and Zimbabwe. As with the other studies discussed in this section, the model being used to examine the determinants of contraceptive use is based on the work of Easterlin (1975). The central hypothesis for the authors is that the use of contraception depends on the motivation to space or limit births and the availability of contraceptives along with appropriate

socioeconomic controls. Use also depends on certain socio-economic factors which directly and indirectly affect use through their effect on motivation (Jayne and Guilkey 1998).

The data come from the interviews of individual women in the DHS surveys of 1986 in Colombia and Tunisia and the 1988 survey of Zimbabwe. These data sets are combined with data from surveys of access to family planning at the community level (Jayne et al. 1998).

The effect of education on the desire to restrict fertility controlling for the number of living children is hypothesized to be positive. Additionally, the researchers wished to test whether access to family planning would affect fertility preferences. This represents an important hypothesis because if it is true, it may be reasonable to supply contraceptive services ahead of demand, rather than to place them where there is pre-existing demand. Information, education and communication efforts' effects on fertility intentions are frequently hypothesized in similar studies. It is shown in the results, however, that whether a woman had heard a family planning message recently showed no effect on fertility intentions in Colombia and Tunisia. Yet in Zimbabwe, it did have the effect of significantly increasing women's desires to postpone her next birth, but had no effect on the desire to have more children (Jayne et al. 1998).

Fertility intentions, education, assets, and access to family planning are hypothesized to affect use patterns. Fertility intentions are almost always highly significant in affecting contraceptive use. The effect of education on contraceptive use depends on the country. In Zimbabwe, women's education of seven or more years

significantly increases use of modern contraception, but lesser amounts have no effect. In Tunisia, wife's education has no effect on any method. In Colombia, wife's education increases use of reversible, modern contraceptives. Wife's education is, however, associated with a reduction in the use of sterilization in Colombia (Jayne et al. 1998).

The program access variables show different effects as well by country. The woman's recollection of having heard a family planning message recently only significantly increases contraceptive use in Tunisia. The presence of a family planning worker affects usage slightly in Tunisia and Zimbabwe. The number of contraceptive methods available in the community significantly increases usage in the two countries where the measure is available; Colombia and Tunisia. Access to fixed facilities was measured as a dummy variable indicating that a facility of a particular type was located within five kilometers of the community in which the respondent resides. For Colombia and Zimbabwe, access to facilities does not affect the use of reversible methods. For Tunisia, doctors offering family planning in the community increase the usage of IUDs, sterilization, and traditional methods. Access to small clinics increased the use of sterilization and access to hospitals increased the use of all reversible methods. It is interesting to note that while current access to family planning is often not significant, historical access, while family planning programs were in the process of developing, often was found to have had effects on lifetime births and deaths (Jayne et al. 1998).

The findings suggest that there were several important ways to increase contraceptive use specific for each country at the time of the surveys. For Colombia, saturation appears to have been reached in general, but increased access for the poor to

reversible methods would help increase their ability to space births. Tunisia's program, while quite successful, could still benefit from the expansion of its existing service delivery points. Zimbabwe has done an excellent job of tapping limited latent demand, but more attention now needs to be paid to limiting messages than to spacing, which has been the traditional focus of both family planning message and program design (Jayne et al. 1998).

This section on supply, demand, and cost contains the common thread of Easterlin's synthesis framework. Not only are the supply and demand for children taken into consideration but the associated supply and demand for family planning services as well. Additionally, the costs involved include not only time and monetary considerations but social and religious sanctions and psychological costs including lack of knowledge of current facilities and their capabilities. The next section of this literature review, psychosocial studies of contraceptive use, will delve further into this latter mentioned topic.

Psychosocial Studies of Contraception

The study of contraceptive behaviors has generally focused on utilization in terms of patterns of use and its affiliated independent variables. Highly empirical in nature, these studies generally lack the aspects of internal motivations driving women to seek family planning advice and knowledge. These psychosocial patterns of behavior not only investigate how women seek out contraceptive information but perhaps why they do so and what they do with the information once they receive it. The empirical studies prevalent in this collection of literature make very little mention of these "internal drives"

and at best include them in motivational aspects regarding the costs of childbearing patterns and fertility regulation. Several studies do exist which discuss the psychological determinants, per se, of contraception. The majority of them, however, are entrenched within theoretical underpinnings and very little work has been done at this point in time which merges the two in harmonic balance.

Social Learning and Information Access

There are many different ways women can obtain information they deem necessary to make educated and informed decisions about responsible contraceptive use. While some studies discuss the mass media and its role in disseminating family planning messages and information pertaining to women's reproductive health, others focus more on interpersonal communication between the women themselves and how they learn about contraceptive technologies, risks, and benefits, from each other. Additionally, other branches of thought actually attempt to create qualitative models based on quantitative results from use patterns of fertility studies. The first study to be discussed in this section falls under this latter category.

Hans-Peter Kohler (1997), in "Learning in Social Networks and Contraceptive Choice," is one study which attempts to merge both the empirical and theoretical into a model of "learning in social networks". Women's attitudes towards modern contraceptive adoption is shaped by their local culture, social influences, and particularly, the availability of contraceptive information. Even when women are aware of modern methods, their assessments about health implications, convenience of use, and contraceptive effectiveness

are often determined by friends' and neighbors' experiences (Montgomery and Casterline 1993; Rogers and Kincaid 1981). A puzzling finding regarding this diffusion of contraceptive knowledge through social networks is the lack of convergence in women's behavior. This divergence, as it were, is more than an immaterial cultural aspect of the demographic transition. Because the incentives to adopt fertility control in similar regions or social groups fall into corresponding patterns, this persistent diversity indicates inefficient diffusion. Women who rely on social networks in their evaluation of available alternatives may fail to adopt the optimal contraceptive method (Kohler 1997).

A qualitative choice model of word-of-mouth communication that explains regional diversity and ethnic stratification through the uncertainties of social learning is created. Markets for contraceptive information are frequently absent, and the media may fail to convey the complex set of ideas and procedures involved in the adoption of fertility control. Faced with this market failure, women engage in social learning to overcome the lack of publicly available and reliable information. The ability to learn from one's friends and neighbors is confounded due to informal conversations among network partners being imprecise in nature. They are characterized by asymmetric knowledge and limited information exchange. A balance between a limited information exchange in social networks and a sophisticated contraceptive decision process gives rise to path-dependent adoption levels within villages, but relatively unrelated patterns across communities. This process of social learning also explains different contraceptive behavior across social strata despite overlapping social networks. It occurs because women attribute varying

contraceptive prevalence in social groups to observable characteristics rather than to the effectiveness of methods (Kohler 1997).

In the researcher's analysis, he states that women use the prevalence of contraceptive methods in their social networks to estimate the effectiveness of the available alternatives. They decide among the methods based on this estimate and on their private information about personal characteristics. The author goes on to say that he focuses on learning and the choice between contraceptive methods rather than on the adoption of fertility control per se. In his model, the social network of women represent the data set, and the contraceptive use of network partners is the dependent variable. Utility is seen to be important as well as the individual characteristics of the adopter of the method. For the appropriate design of family planning programs, the study suggests that the initial number of users is more important than the size of each woman's social network for successful diffusion of reliable information. Thus, some of the "early adopters" of a method must maintain the use of that method and spread the word, in a sense, if the use of that method is to be retained in any predictable manner (Kohler 1997).

Another study focusing on the dissemination of reproductive information is by Sabiha H. Syed (1979), in "Communications Channels and Family Planning in Pakistan." Investigating the effects of mass media and interpersonal communications on contraceptive use is a central focus of the Pakistan family planning program, which was established in 1965. The mass media campaign uses radio, television, movies, and printed materials to publicize family planning messages to the general public. The objectives involved are to create awareness of a small family norm, educate couples about the

availability of contraception, and motivate them to use family planning services. In order to measure the impact of these efforts, the 1975 Pakistan Fertility Survey (PFS) incorporated a series of questions on communications. The research project then attempts to analyze the influence of the communications strategy used by the Pakistan family planning program on the reproductive health choices of Pakistani women (Syed 1979).

With 'ever-use' of contraception and 'intent to use' contraception being the key dependent variables, the author utilizes regression analyses to discover the effects of these mass media programs. The results indicate that contact with family planning personnel and radio messages were significant for most categories of women who report ever-use of contraceptives. Television, magazines, and newspapers were significant only among young urban women, for whom contact with field workers was not relevant. Regarding the intent to use contraceptives, radio and interpersonal contact were significant for rural women only. Although almost all the women had listened to the radio, only half of them had heard about family planning in this venue. For most groups of women, those who had been contacted by field workers were much more likely to have used contraceptives, but a vast majority of women had never been contacted by a fieldworker. The principal policy challenge coming out of this study is to design communications strategies that will reach the less privileged, rural, and illiterate people who are by far the majority in Pakistan. This is key due to low literacy rates as well as the majority of media being inaccessible in rural areas, save the radio. Less than a third have ever been contacted by family planning personnel. An additional finding is that younger, more urban women are far more receptive and accepting of family planning messages than older women (as well as the

rural women who have heard family planning messages on the radio). The researcher concludes that many more questions need to be answered if more effective communications strategies are to be designed and implemented (Syed 1979).

Both of the above mentioned studies relate how contraceptive information is garnered through various modes of communication. While the former takes on a much more psychological, internal approach, the latter encompasses more of a macro, cultural dissemination perspective of information dissemination via the mass media. Each method of "data" interpretation has its own biases. Kohler's model (1997) of social learning incorporates interpretation errors which reflect our all too human tendencies consistently exhibited in interpersonal communications. Syed (1979), on the other hand, fails to mention the ubiquitous slant of the media itself. What we see and what we hear via mass media is prepackaged by those who perhaps have differing world views than our own. This can undoubtedly affect our interpretations of these media messages and thus their own credibility itself.

The Reproductive Health Awareness Model

A brief discussion of this "alternative" model of contraception and family planning is necessary due to its novelty in being a holistic approach as well as all-encompassing in its intentions for quality of care. The final section of the literature review on the health belief model has a much richer literate history going back for decades surrounding its use in socio-medical models of inquiry.

Wilson (1997), in "The Reproductive Health Awareness (RHA) Model: A Qualitative Perspective," states that this model was developed by the Georgetown University Institute for Reproductive Health. The model encourages self choice regarding family planning options, informed choice, and flexibility to change family planning options with changing circumstances, and the inclusion of men and the family.

A basic premise of the RHA model is that individuals are most likely to efficiently and effectively continue to use those services which are chosen by them rather than imposed upon them by others. Emphasis on a life cycle approach to reproductive health care services and choices further acknowledges that choices must be flexible and responsive to the changing needs of individuals over the course of their fertile years and beyond (Wilson 1997).

Additional details about this model are included in C. Pyper's article (1997). This reproductive health awareness approach promotes a more personal involvement by encouraging individuals to observe changes that occur in their own bodies (Pyper 1997).

The dimensions included in the reproductive health awareness model are: Interpersonal communication (being able to discuss with others the changes occurring sexually in your own body); Body self-awareness (being aware of what is happening with your own body, both sexually and non-sexually); Gender awareness (cognition of who you are as a woman or a man in socio-cultural context); and Integration of sexuality (the capacity to merge the physiological sexual changes in your body with your own concepts of who you are as a sexual being) (Pyper 1997:332).

When asked the reasons for sexual and reproductive health problems, many blame their problems on inadequate services. However, even when adequate services are provided they are not always used. A health care provider from India explains:

> Despite provision of mobile services at the doorstep of the people in rural areas, it has been seen that these are not only rejected but are also highly resented. Since sexual and reproductive health is a highly sensitive and personal issue, it is important to help the community first analyze its concerns and existent behavioral patterns and then look for solutions which will be most effective. This whole process requires extremely gentle, sensitive, and thoughtful yet focused facilitation.

(Pyper 1997:334).

Some communities are very resistant to participating in holistic programs about sexual and reproductive health. One of the most common reasons for this is due to community leaders being suspicious of health care providers, whom they suspect are trying to encourage promiscuity by encouraging discussion about sexual or reproductive health. This happens most frequently when the traditional belief of the society is that sex and sexuality are secret matters which should not be discussed (Pyper 1997).

Thus, it appears that the Reproductive Health Awareness Model is a holistic approach to understanding reproductive health not only from a physiological perspective but from a behavioral path as well. This theory is not very common, however, in a search of the literature on contraceptive use. The following model, the Health Belief Model, is the prevalent ideological framework in this context.

The Health Belief Model (HBM)

The above mentioned Reproductive Health Awareness Model does seem well suited to the subject of this thesis on contraceptive use. However, with the apparent dearth of integration of this model into contraceptive use studies, I shifted to one of the more prominent and better known theories in the studies of demography and medical sociology, that of the Health Belief Model (HBM). For the purposes of this literature review section, it will be noted that detailed information on the Health Belief Model itself, its founders, and major theorists, will not be discussed. The intent here is to introduce literature which explores contraceptive behaviors in terms of the Health Belief Model.

Marilynn E. Katatsky (1977), in her article "The Health Belief Model as a Conceptual Framework for Explaining Contraceptive Compliance," defines this model as integrating several aspects of health decision making, including preventive health behaviors as well as sick role behaviors. It involves the dynamic interaction of the individual with other individuals and events as they move through a series of stages or phases. The person's health beliefs concerning susceptibility, the seriousness of the disease, etc., serve as the orientation to this decision making process. The model includes the following elements: (1) the individual's perceptions of susceptibility to the disease and their perception of the seriousness or severity of the disease; (2) the individual's perceptions of the possible benefits weighted against the possible barriers to taking action; (3) internal and external "cues to action", and (4) various demographic, social, psychological, and structural variables which also interact in the decision making process (Katatsky 1977).

As applied to compliance behavior, the model is comprised of four major sets of factors: (1) health motivations; (2) value of illness threat reduction; (3) probability that compliant behavior will reduce the threat; and (4) various modifying and enabling factors such as demographic, structural, attitudinal, etc (Katatsky 1977).

The strength of the model rests on the predictive value of the individual's health beliefs and perceptions, which are alterable, whereas certain factors such as ethnicity or social class are relatively fixed and enduring. Although this latter group of variables may be found to be related to a particular health problem, public health programs can do little or nothing to effect changes in them (Katatsky 1977).

There are a number of reasons for turning to the Health Belief Model to provide a conceptual framework in family planning. The Model is based firmly on social psychological theory and relies heavily on motivational and cognitive factors. By taking an expectancy theory approach to health behavior, the Health Belief Model derives considerable conceptual strength (Katatsky 1977).

The area of family planning behaviors, although understandably more complex than disease and illness seeking behaviors, also shares some of the same problems. The use of family planning methods may be seen by some users as having preventive health benefits for the user and her children. However, as any illness implies some costs which may or may not be immediately apparent to the individual, pregnancy and the birth of an additional child imply costs and benefits which may also be rather difficult for the individual to assess.

One further aspect includes that for many family planning programs, especially in developing countries, the family planning methods offered to patients are often limited to those which the particular clinic or agency deems most appropriate. Even when there is choice available and considerable patient involvement, once the decision is made, the patient must continue some particular activity (pill taking, checking the IUD, inserting a diaphragm, etc.), as it true of many other medical therapies (Katatsky 1977).

The Health Belief Model then seems appropriate to incorporate into the study of contraceptive use and prevalence. While it may not be as holistic as the Reproductive Health Awareness Model in its own right, it accounts for behavioral mechanisms as well as socio-cultural components involved in the pursuit of medical care, be it preventive or reactive. Additionally, it can be applied in a more general manner to several niches of studies on health behavior whereas the Reproductive Health Awareness Model is only applicable to reproductive health. Regardless of each of their strengths and weaknesses in the field of contraceptive use studies, it is my contention that both ideological frameworks are well suited to the study of fertility regimes due to their separate capacities to understand, and explain, human fertility behaviors.

This chapter presented an overview of relevant literature in the field of contraceptive use and fertility studies. Each section exerts its own influence on the potential findings within this thesis. While the empirical studies help to inform my choice of significant variables to be analyzed in future chapters, the psychosocial literature loans itself well to understanding some of the theoretical underpinnings behind my research questions as well as perhaps shedding light on potential future findings.

CHAPTER 3

STUDY SETTING, DATA, AND METHODOLOGY

Data for this study come from the DHS (Demographic Health Surveys). For comparative purposes, a description of the two study settings is presented. Even though Indonesia and the Philippines lie in the same body of water in the same region of the world, both are inordinately different in many aspects. In order to place the data sets into context, a discussion of the historical evolution of the DHS is included. Details about the data itself will be discussed along with methodological considerations.

Study Setting

The Philippines, a country with a population of about 80 million, lies within the arc of nations that sweeps southeastward from mainland Asia to Australia, spanning 1,094 kilometers from east to west. The archipelago is composed of about 7,100 islands, many of which are still uninhabited. Consisting of a total area of 300,000 square kilometers, 92% of which is found in the 11 largest islands. There are three major island groups: Luzon, the largest island situated in the north, accounts for 47% of the land area; Mindanao in the south has 34% of the total land area; and the Visayas, a group of smaller islands between Luzon and Mindanao, which constitute the remaining 19% of land area (National Statistics Office 1994:1). The archipelago has a diverse topography and climate.

The family planning movement in the Philippines was initiated by the private sector in the 1960s. When the Population Act was passed in 1971, family planning became an integral part of the national development plan. Under the Aquino administration (1986 to 1992), the family planning program suffered from differing political and financial support due to the strong influence of the Catholic Church. It became mainly a health program with the primary goal of improving the health of the mother and child, with fertility reduction only as a consequence (National Statistics Office 1994). Today the Philippines has somewhat higher fertility rates compared to many of its neighboring countries in Southeast Asia.

The Republic of Indonesia, which consists of approximately 17,000 islands, is an archipelago which, like the Philippines, lies between Asia and Australia. There are five major islands: Sumatra in the West; Java in the South; Kalimantan straddling the equator; Sulawesi, which resembles the letter "K", and Irian Jaya bordering Papua New Guinea in the West. Two remaining groups of islands are Maluku and Nusa Tenggara. More than 80% of Indonesia's territory is covered by water. The land area is about 1.9 million square kilometers. The large number of islands and their dispersion over a wide area has given rise to a diverse culture and hundreds of ethnic groups, each with its own language. This is the basis of the national motto, "Unity in Diversity". Indonesia's climate is tropical with two seasons. The dry season extends from May to October, and the rainy season from November to April (National Statistics Office 1997:1).

With a projected 1997 population of 201 million, Indonesia is the fourth most populous country in the world after the People's Republic of China, India, and the United

States. In addition to an already large population, Indonesia has a high rate of population growth. However, this rate has declined in the last two decades.

Family planning activities were initiated in Indonesia in 1957 by a private organization called the Indonesian Planned Parenthood Association (IPPA), which works under the auspices of the International Planned Parenthood Federation (IPPF). IPPA provided family planning advice and services as well as maternal and child care. In 1968 the government established a National Family Planning Institute, which was reorganized as the National Family Planning Coordinating Board two years later. NFPCB is a non-departmental body which reports directly to the President. The government of Indonesia has a strong commitment to family planning and has been working with religious and community leaders to develop programs to promote this endeavor. In less than three decades, the population policy has not only contributed to reducing the fertility rate of the country by half, but is also helping to improve family welfare (National Statistics Office 1997).

These two countries make for an interesting comparison due to various similarities and differences. For example, as discussed in Chapter 1, both Indonesia and the Philippines are island nations with similar physical topographies. Accordingly, disparate levels of intraregional development and possible difficulties with transportation to a facility could be a hindrance in gaining access to family planning and contraception. Additionally, both have similar rates of economic development (at the time the studies were conducted in 1993 and 1994). In 1993 the GDP (Gross Domestic Product, a measure of the market value of all the goods and services produced by a nation during a specified period, per

capita) of the Philippines was $834 (in U.S. dollars). In 1994, the GDP of Indonesia was $909 (in U.S. dollars) (U.N. Statistics Division, 1998 electronic data). Such similar socioeconomic development levels could presumably indicate that there are comparative costs to using contraception in these two countries. However, the differences may make for distinct fertility desires operating through these costs (monetary, psychological, temporal, physical, etc.).

Key differences include religion, culture, and government. The Philippines is unique as the only Christian country in Asia. Over 90% claim to be Christian, 80% of those being Roman Catholic. The Spaniards and their missionaries were quite successful in their attempts at conversion. Largest of the minority religious groups are the Muslims (about 8%) who are found chiefly on the island of Mindanao and along the Sulu Archipelago. About 4% of Philippinos belong to the Philippine Independent Church, founded by Gregorio Aglipay in 1902 as a nationalist Catholic church. The Iglesia ni Kristo is the largest community of Protestant believers, to which 4% of the population belong. Baptists, Methodists, Mormons, Jehovah's Witnesses and members of other religious groups make up about 2%. Except for a small percentage of Buddhist believers, the remainder of the population are animists (Peters 1997:40). Animists are defined as those who practice any of various primitive beliefs whereby natural phenomena and things animate and inanimate are held to possess an innate soul (Morris 1976:52).

The early Indonesians were animists, and practiced ancestor and spirit worship. When Hinduism and Buddhism spread into the archipelago it was overlaid on this already well developed spiritual culture. Islam became the predominant religion of Indonesia, but

it was more Islam rooted in Hinduism, Buddhism, and animism. As for Christianity, despite the lengthy colonial era, the missionaries have only been successful in converting pockets of the Indonesian population. Christian beliefs are also usually bound up with traditional religious beliefs and customs. There are also still a few areas where animism survives virtually intact (Turner et al. 1997).

From a cultural perspective, Philippinos are inclined towards large families and are very fond of children. Thus, the Philippines' family planning programs are hampered not only by the strong Catholicism but also by the usual Asian wish for the "insurance" of a large family in old age. The Philippines has developed a unique mixed culture of foreign influences and indigenous elements. On June 12, 1898, from the balcony of his house in Cavite, General Emilio Aguinaldo declared the independence of the Philippines. The Philippine national flag was raised and the national anthem played for the first time. Other than the Muslims and some of the isolated tribes, there are not many whose culture remains unadulterated by Spanish and North American influences (Peters 1997). Some six million Philippinos make up the so-called cultural minority or tribal groups, which collectively comprise 12% of the total population. This figure includes the four million Muslims. There are 60 ethnological groups in total, distributed mainly around North Luzon, central Luzon, Mindoro, and Western Mindanao and the Sulu Islands. Many of these groups are looked after by the Office for Northern Cultural Communities (ONCC) or the Office for Southern Cultural Communities (OSCC), which are responsible for protecting the cultural minorities' way of life, and assisting the government in bringing material and technical aids to these people (Peters 1997).

In Indonesia, however, the rugged, mountainous terrain and the fact that the country is made up of any islands has separated groups of people from each other, resulting in an extraordinary differentiation of language and culture across the archipelago. Indonesians are said to be divided into approximately 300 ethnic groups which speak more than 365 languages and dialects. Indonesia's national motto is "Bhinneka Tunggal Ika", an old Javanese phrase meaning "They are many; they are one", which gets translated into "Unity in diversity". The peoples of the archipelago were not "Indonesian" until 1949, when a line was drawn on the map enclosing the islands as such. Most Indonesians are of Malay stock, descended from peoples who originated in China and Indochina, and spread into Indonesia over several thousand years. The other major grouping is the darker skinned, fuzzy haired Melanesians who inhabit much of easternmost Indonesia. Despite the Malay predominance, the culture and customs of the various islands are often quite different. The Indonesian terrain is partly responsible for the incredible diversity; mountains and jungles cut off tribes and groups on certain islands from the outside world. Of all the ethnic minorities in Indonesia, few have had a larger impact than the Chinese, or "overseas Chinese" as they are commonly known. Although comprising less than 3% of the population, the Chinese are the major force in the economy, which at times causes major anti-Chinese resentment in Indonesia. Despite this diversity that exists, Indonesia is quite unified nationally. Through their subjection to Dutch colonialism, they are united by mass culture and the national language, Bahasa Indonesian (Turner et al. 1997).

The Philippines has a constitutional form of government. The legislative power is vested in Congress, composed of the Senate and the House of Representatives. The

president is elected by the voters for a six year term. The administration of the Republic of the Philippines is divided into 12 regions (plus Metro Manila as the National Capital Region) consisting of 76 provinces. Every province consists of a provincial capital and several municipalities, which in turn consist of village communities (barangays). A barangay, with an elected "barangay captain", is the smallest socio-political administration unit in the Philippines (Peters 1997).

In Indonesia, executive power rests with the president, who is head of state and holds office for a period of five years. The president appoints cabinet ministers, and this inner sanctum is the core of government power in Indonesia. Elections are held every five years to elect 425 of the 500 members of the House of Representatives. The other 75 members are appointed by the armed forces. This is the "real house" of government, proposing and passing government legislation. It is divided into permanent committees which carry out the business of government. The highest political institution is the People's Consultative Congress (MPR), which is composed of all the members of the House of Representatives along with 500 appointees representing various groups and regions. The congress also elects the vice-president. Though these national policy dealings are the preserve of the central government, for most Indonesians Jakarta is far removed and real government is at the district or village level. Politically, Indonesia is divided into 27 provinces including the three special territories of Aceh, Jakarta, and Yogyakarta. Each province has its own political legislature, headed by a governor, with extensive powers to administer the province. The 27 provinces are further broken down into 241 districts headed by a district head and 56 municipalities headed by a mayor. The

districts are then broken down into 3625 subdistricts each headed by a subdistrict head. The subdistricts are then segregated into village groupings. Each level of government has its own bureaucracy. Despite this extended hierarchy of government, often the most relevant level of government is at the village level. The village is the main social unit, providing welfare, support, and guidance (Turner et al. 1997).

With the disparities apparent between both the countries of Indonesia and the Philippines, there will then be differences in the costs of fertility regulation, the supply, demand, and access to such facilities. Religion, as postulated in Chapter 1, will likely play a major role in the use of contraception, through psychological costs and potential social stigma. The stance on family planning and contraception for Roman Catholics is quite clear and well stated in its propaganda. However, the situation in Indonesia becomes more complex. While the religious majority is Muslim and, as discussed in the religion section in the previous chapter, Muslims are generally against contraception, it begs the question whether this opposition to contraception will accord with the actions of Indonesian women. Upcoming statistical analyses will determine if divergent religiosities indeed do have a dramatic effect on contraceptive use. Cultural differences do play a significant role in human behavior as well. However, in this case, there is no one variable which tests solely for cultural diversity. This factor is accounted for in the multitude of demographic variables included. Finally, governmental differences between Indonesia and the Philippines may not directly affect an individual's choices in the matter of contraceptive use. Although, since the government exudes a major influence in the

funding, development, and placement of family planning programs and facilities through policy tenets, it too will affect use in a direct manner.

Historical Evolution of the DHS

The Demographic Health Survey (DHS) research endeavor began nearly thirty years ago under a different name, that of the World Fertility Survey (WFS). In the late 1960s and early 1970s several factors led to the creation of the World Fertility Survey. First there was a growing concern among governments and demographers about accelerating rates of world population growth, especially in the developing countries, and sustained high levels of fertility. At the same time, reliable information on birth rates was lacking in most parts of the world. For the world as a whole, only about 34 percent of the population were living in an area where birth registration was considered reliable. Some fertility data were becoming increasingly available from special surveys on knowledge, attitudes, and practice of family planning. By the end of the 1960s it was estimated that about 150 major studies had been carried out on fertility issues. Many of these studies, however, did not follow the basic principles of sound survey design and management. Objectives were often vague and the content and design diffuse and imprecise. Frequently little or no provisions were made for the evaluation of errors. The data collected were often insufficiently tabulated and analyzed and sometimes never published. In many cases the surveys had no direct links with the country's policy making bodies and were unconcerned with making the data comparable with those obtained in surveys elsewhere (Cleland and Scott 1987).

Another relevant factor was a dramatic increase which took place in the funds made available by some industrialized countries to assist developing countries in population matters. Many developing countries were not immediately interested in initiating major population programs, due to a large extent to lack of information on fertility trends and patterns and other demographic factors. In many of the developing countries a precondition for the initiation and exchange of demographic research and a better understanding of interrelationships between demographic trends and development was an improved data base.

Finally, in the late 1960s the International Statistical Institute (ISI) was undergoing an appraisal of its role and future responsibilities. This organization, which at the time was over 80 years old, had begun as an association of national official statisticians having the primary aim of developing international statistical standards and promoting the progress of national statistics. Later, when the United Nations established the Statistical Commission, this body took over many of the functions of the ISI. Suggestions were made to promote research on a wide range of topics, including "birth control and abortion". In addition, it was proposed that the Institute could fulfill a useful function by providing services to governments and other bodies based on specific statistical problems. After much time and debate, in March 1972 a meeting of consultants was convened which made recommendations about a number of steps to be taken by the ISI including the establishment of several committees to prepare detailed proposals for a "World Fertility Survey". In 1971 the United Nations General Assembly suggested that 1974 be deemed the World Population Year, and they invited governments and non-governmental

organizations to participate in the program. This research program became the largest activity of the World Population Year (Cleland and Scott 1987).

The first and most basic aim of the WFS program was to assist countries to acquire the scientific information that would permit them to describe and interpret their populations' level of fertility as well as investigate meaningful differentials in patterns of fertility regulation. Improved data on these topics would facilitate national efforts in economic, social and health planning. A second important purpose of the WFS was to increase national capacities for fertility and other demographic survey research, particularly in developing countries. A hope was that in participating in the WFS, a country would acquire an increased cadre of trained personnel who could undertake further research. A final purpose of the WFS was to collect and analyze data on fertility which are intentionally standardized and thus permit comparisons cross culturally.

The development phase of the WFS began in July 1972 and extended until June 1974. The major task in the project development phase was to develop the various survey instruments. Around mid-1974 the implementation phase of the program began. In 1980 a comprehensive appraisal of the program was carried out by six independent consultants with experience in the fields of statistics, demography, health and family planning. In 1982 and 1983 the ISI and the two main funding agencies took steps which clearly indicated that although the WFS was to be brought to an end in its present form, the activities it had carried out in the past would, to a large extent, continue in the future but in different form. Thus funding continued by USAID (United States Agency for International Development)

through 1984-1987, and still continues on today, but in its new machinery, that of the DHS, the Demographic Health Surveys (Cleland and Scott 1987).

The Demographic Health Surveys program is currently funded by USAID and is administered by Macro International Inc., located in Calverton, Maryland. The first phase of the project (DHS-I) began in September 1984 and the second phase (DHS-II) began in 1988. The third phase of the Demographic and Health Surveys program (DHS-III) began in September 1992 and continued through September 1997 (Macro International Inc. 1999).

The Demographic Health Survey (DHS) program is a thirteen year project to assist developing countries in conducting and analyzing surveys on population and health. The DHS maintains a Data Archive that is a computerized archive of survey data collected from countries in Africa, Asia, and Latin America. For each country, several datasets are usually available, including: Individual women's data (standard DHS survey), household data, male or husband's data (for some countries), and service availability data (for some countries). The standard DHS survey consists of a household schedule and a women's questionnaire. A nationally representative sample of women aged 15-49 are interviewed. The women's questionnaire contains information on the following topics: Background characteristics, lifetime reproduction, contraceptive knowledge and use, maternity and breastfeeding, immunization of children, diarrhea/fever/cough in children, height/weight of children, marriage, fertility preferences, husband's background, and women's work status. Additional topics in some surveys include: National family planning, social marketing,

sterilization, pill compliance, maternal mortality, causes of death, AIDS, and women's employment (Macro International Inc. 1999).

Data from the women's questionnaire are available in two different forms. Raw data files, which contain the women's data in the form in which the data were collected on the questionnaire. Each raw data file contains fully edited data with imputed dates of key events in the respondent's life added to the data file. Recode data files, however, contain the women's data in a standardized format which is comparable across countries. Each recode data file contains all of the standard variables in fixed locations, with all country-specific variables added after the standard variables. Recode data files also contain many constructed variables for the convenience of the analyst.

The data files themselves are available in three formats to meet the needs of researchers and the available hardware and software. Flat files contain a single record of over 2,000 characters for each case in the data file. These data files are designed for use on mainframe systems and are approximately 10-60 megabytes in size. Rectangular files contain a fixed number of records for each case in the data file. These data files are designed for use with SPSS/PC+ and other PC-based software packages. They require approximately 8-50 megabytes of disk space on PCs, but more on mainframes. Hierarchical files contain a varying number of records for each case and are designed for use with packages supporting complex data structures. Each data file averages 4-35 megabytes in size (Macro International Inc.1999).

Data

Both the data from Indonesia and the Philippines were taken from the Demographic Health Surveys. The Indonesia data were collected in 1994 and consist of both an individual recode zipped file (15,190,808 K in size) as well as community service availability raw data (406,590 K in size), from the same year. The individual as well as the community service availability data sets are rectangular in nature (as compared to flat or hierarchical, as discussed previously in the text). The data from the Philippines are from 1993 and reflect the similar survey material as with Indonesia (rectangular individual recode file and rectangular community service availability raw data file). The individual recode file is 7,856,118 K and the community service availability raw data file is 45,350 K (both in computerized zipped format).

Once the data were downloaded onto a zip disk and formatted into a computer file recognizable by the software package SPSS (Statistical Package for the Social Sciences), it was then necessary to combine the community service availability data file with the individual recode file for each country. In this research project then, I am using two separate data files which need to be merged. The individual data contain information on the demographics of each woman being interviewed, her fertility behaviors and preferences, past and current child bearing patterns, health of the mother and child, various socioeconomic indicators, and knowledge of contraceptive methods and a health facility availability. The community service availability data include variables on which types of facilities and services are available in the interviewee's area of residence, physical distance and time to these services and facilities, the frequency of visits, the type of

transport used to get to the facility or service, and knowledge about specific services being offered at differing types of facilities. The way these two data files are merged is by linking the common community code in the service sector file to the community of residence of the individual being interviewed. This service sector data is then attached to the end of the individual data file. Merging the two files allows the researcher to further understand how the individual patterns of behavior coalesce into community fertility patterns.

After connecting the individual data file with the community service availability file for both Indonesia and the Philippines, I began the process of selectively weeding out several variables of interest from the merged data sets for my statistical research endeavor. Much of this selection process, as stated in the introduction in Chapter 1, centered around significant variables discussed in the body of literature on contraception and fertility.

Table 3.1 represents my selection of variables and how they have been coded. Asterisks have been included specifying which statistical analyses apply for each variable. The variables are grouped in a similar manner as the literature: demographic determinants, physical access indicators, fertility, and informational access.

Table 3.1: Demographic Variables for Analyses

Indonesia	The Philippines
Dependent Variable: ***Contraceptive Use 0=Not using 1=Using	Dependent Variable: ***ContraceptiveUse 0=Not using 1=Using
Independent Variables: ***Age Continuous #s: from 15-49	Independent Variables: ***Age Continuous #s: from 15-49
***Residence 0=Urban status 1=Rural status	***Residence 0=Urban status 1=Rural status
***Highest education level 0=No education 1=Primary education 2=Secondary education 3=Higher education	***Highest education level 0=No education 1=Primary educatation 2=Secondary education 3=Higher education
*Literacy 0=Cannot read 1=Can read	*Literacy 0=Cannot read 1=Can read
***Religion 0=Muslim 1=Protestant/Christian 2=Catholic 3=Hindu 4=Buddhist 5=Other	***Religion 0=Roman Catholic 1=Protestant 2=Islam 3=Other
***Children Ever Born (CEB) Continuous #s: from 0-16	***Children Ever Born (CEB) Continuous #s: from 0-16
*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests	*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests

Table 3.1, continued

Indonesia	The Philippines
*Relationship to household (HH) head 0=Head of Household 1=Wife 2=Daughter 3=Daughter-in-law 4=Granddaughter 5=Mother 6=Mother-in-law 7=Sister 8=Other	*Relationship to household (HH) head 0=Head of Household 1=Wife 2=Daughter 3=Daughter-in-law 4=Granddaughter 5=Mother 6=Mother-in-law 7=Sister 8=Other
*Age of the household (HH) head Continuous #s	*Age of the household (HH) head Continuous #s
*Sex of the household (HH) head 0=Male 1=Female	*Sex of the household (HH) head 0=Male 1=Female
*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests	*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests

Of the above mentioned demographic variables to be used in upcoming statistical analyses, all will be included in the univariate descriptive frequency distributions, with many being in the bivariate descriptive crosstabulations and multivariate logistic regressions. The demographic variables have been known, in the literature pertaining to contraceptive use and fertility, to be highly significant predictors of use.

It is relevant to note that for the purposes of this research project, marriage is not included in the demographic variables under scrutiny. Specifically, Indonesia originally

maintained a sample of 28,168 women while the Philippines had 15, 029. However, upon originally running frequency distributions it came to light that the Indonesian sample was only ever-married women whereas in the Philippines the sample consisted of a stratified, random selection of women between the ages of 15-49 of various marital statuses, including married, never married, living together, not living together, divorced, and widowed. In order to facilitate a comparative research endeavor, I selected out those women whose answer categories were anything other than "Currently married". This was done in SPSS by using a "select if" command, thus excluding any "Non-currently-marrieds" from the Philippines' sample. This was also done in Indonesia but the reduction in the sample size was not as significant, due to answer choices either falling into married, widowed, or divorced. Therefore, my current sample size is 7,236 for the Philippines and 26,220 for Indonesia. While there is a marked difference in the "N" for each country, it is not presumed to be relevant in the context of this study, since both sample sizes are quite large and will suffice for the statistical analyses. Additionally, this is why the demographic variable marital status is not included in the majority of tables in this paper.

Table 3.2 includes the structural (physical access indicators) determinants used in the statistical analyses and the way in which the variables are coded. Asterisks are included for the same reasons denoted in Table 3.1.

Table 3.2: Structural Variables for Analyses

Indonesia	The Philippines
Dependent Variable:***Contraceptive Use 0=Not using 1=Using	Dependent Variable:***Contraceptive Use 0=Not using 1=Using
Independent Variables:***Time to a facility 0=0-14 minutes 1=15-29 minutes 2=30-59 minutes 3=60-89 minutes 4=90+ minutes 5=DK or missing	Independent Variables:***Time to a facility 0=0-14 minutes 1=15-29 minutes 2=30-59 minutes 3=60-89 minutes 4=90+ minutes 5=DK or missing
***Difficulty in getting to a facility 0=It is easy 1=It is difficult	***Difficulty in getting to a facility 0=It is easy 1=It is difficult
***Mode of transport to get to a facility 0=Walked 1=Land motorized 2=Water motorized 3=Land non-motorized 4=Water non-motorized 5=Other	***Mode of transport to get to a facility 0=Walked 1=Private vehicle 2=Hired vehicle 3=Public transport 4=Other
***Distance to a facility Continuous #s	***Distance to a facility Continuous #s
***Ownership of modes of transport: Own bicycle: 0=No/1=Yes Own motorcycle/motorboat: 0=No/1=Yes Own car: 0=No/1=Yes	***Ownership of modes of transport: Own bicycle: 0=No/1=Yes Own motorcycle: 0=No/1=Yes Own car: 0=No/1=Yes
*=use univariate descriptive analysis only **=use in univariates and crosstabs ***=use in all statistical tests	*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests

All of the above mentioned structural variables shall be included in the univariate analysis, the bivariate crosstabulations, and the multivariate logistic regressions. The term structural refers to physical accessibility issues and the interaction of transportation with availability of the resource and their potential effects on contraceptive use.

Table 3.3 includes all of the fertility variables to be used in this study and includes the coding as well as asterisks indicating which statistical analyses shall be utilized on which variables.

Table 3.3: Fertility Variables for Analyses

Indonesia	The Philippines
Dependent Variable: ***Contraceptive Use 0=Not using 1=Using	Dependent Variable: ***Contraceptive Use 0=Not using 1=Using
Independent Variables: *Current use by method type 0=No method 1=Folkloric method 2=Traditional method 3=Modern method	Independent Variables: *Current use by method type 0=No method 1=Folkloric method 2=Traditional method 3=Modern method
*Reason for current method 0=Rec.by FP worker 1=Rec.by friend/relative 2=Side effects of other methods 3=Convenience 4=Access/availability 5=Cost 6=Wanted permanent method 7=Husband preferred 8=Wanted more effective method 9=Other	*Reason for current method 0=Rec.by FP worker 1=Rec.by friend/relative 2=Side effects of other methods 3=Convenience 4=Access/availability 5=Cost 6=Wanted permanent method 7=Husband preferred 8=Wanted more effective method 9=Other
*Intention to use 1=In next 12 months 2=Use later 3=Unsure about timing 4=Unsure about use 5=Does not intend to use 6=Don't know	*Intention to use 1=In next 12 months 2=Use later 3=Unsure about timing 4=Unsure about use 5=Does not intend to use 6=Don't know
*=use in univariate descriptive analysis only **=use in univariates and crosstabs ***=use in all statistical tests	*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests

Table 3.3, continued

Indonesia	The Philippines
Independent Variables:	Independent Variables:
*Problem with current method	*Problem with current method
0=No problem	0=No problem
1=Husband disapproves	1=Husband disapproves
2=Access/availability	2=Access/availability
3=Costs too much	3=Costs too much
4=Inconvenient to use	4=Inconvenient to use
5=Other	5=Other
6=Don't know	6=Don't know
*Main reason not to use a method	*Main reason not to use a method
0=Wants children	0=Wants children
1=Lack of knowledge	1=Lack of knowledge
2=Respondent opposed to FP	2=Respondent opposed to FP
3=Partner/others opposed to FP	3=Partner/others opposed to FP
4=Costs too much	4=Costs too much
5=Side effects/health concerns	5=Side effects/health concerns
6=Hard to get methods	6=Hard to get methods
7=Religion	7=Religion
8=Difficult to get pregnant	8=Difficult to get pregnant
9=Menopausal/hysterectomy	9=Menopausal/hysterectomy
10=Inconvenient	10=Inconvenient
11=Other	11=Other
12=Don't know	12=Don't know
***Wanted last child	***Wanted last child
0=Wanted then	0=Wanted then
1=Wanted later	1=Wanted later
2=Wanted no more	2=Wanted no more
3=Don't know	3=Don't know
***Fertility preference	***Fertility preference
0=Have another	0=Have another
1=Undecided	1=Undecided
2=No more	2=No more
3=Don't know	3=Don't know
*=use in univariate descriptive analysis only	*=use in univariate descriptives only
**=use in univariates and crosstabs	**=use in univariates and crosstabs
***=use in all statistical tests	***=use in all statistical tests

The majority of variables in Table 3.3 shall only be used in the univariate descriptive frequencies only. This is due to the purpose behind the bivariate crosstabulations and multivariate regression analyses. The crosstabulations examine to what extent the independent variables have an effect (percentage-wise) on the dependent variable of contraceptive use. The regression analyses test for the likelihood of use through those independent variables. Most of the variables in Table 3.3 discuss aspects associated with current use or reasons not to use another particular method (thus, presuming use already). Therefore, they are not included in the more advanced analyses. The two variables which will be used in the crosstabulations and the regression analyses are "Wanted last child" and "Fertility preference". I feel that these are appropriate measures which will predict use of contraceptives.

Contraception, in this context, is defined as any preventive measure to inhibit pregnancy. The variable "Contraceptive use" was originally coded including: "Used before last birth", "Used (and still using) since last birth", and "Not using". I collapsed the coding categories to create a dichotomous variable testing for "Using" and "Not using". "Use by method type" is a question in the DHS survey which breaks down the type of use categorized by "Folkloric method", "Traditional method", and "Modern method" (as compared to "No method". "Folkloric" methods would include herbs and "primitive" beliefs such as magic; "Traditional" methods include the rhythm method and coitus interruptus (or the withdrawal method), and "Modern" methods include the use of condoms, birth control pills, IUDs, and diaphragms. Sterilization is not included in these

methods since it incorporates a separate area of questions in the surveys, along with abortion (used as a method of birth control).

Table 3.4 includes all of the informational access variables to be used with the coding indicated as well as asterisks denoting the statistical tests to be utilized.

Table 3.4: Informational Variables for Analyses

Indonesia	The Philippines
Dependent Variable: ***Contraceptive Use 0=Not using 1=Using	Dependent Variable: ***Contraceptive Use 0=Not using 1=Using
Independent Variables: ***Knowledge of any method 0=Knows no method 1=Knows only folkloric method 2=Knows only traditional method 3=Knows modern method	Independent Variables: ***Knowledge of any method 0=Knows no method 1=Knows only folkloric method 2=Knows only traditional method 3=Knows modern method
***Knows source for modern method 0=Doesn't know source 1=Knows source 2=Unsure or missing	***Knows source for modern method 0=Doesn't know source 1=Knows source 2=Unsure or missing
***Reads newspaper once a week 0=No 1=Yes 2=Don't know or missing	***Reads newspaper once a week 0=No 1=Yes 2=Don't know or missing
***Watches T.V. once a week 0=No 1=Yes 2=Don't know or missing	***Watches T.V. once a week 0=No 1=Yes 2=Don't know or missing
***Listens to the radio every day 0=No 1=Yes 2=Don't know or missing	***Listens to the radio every week 0=No 1=Yes 2=Don't know or missing
*=use in univariate descriptive analysis only **=use in univariates and crosstabs ***=use in all statistical tests	*=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests

Table 3.4, continued

Indonesia	The Philippines
Independent Variables: ***Heard about FP on the radio 0=No 1=Yes 2=Don't know or missing ***Heard about FP on television 0=No 1=Yes 2=Don't know or missing ***Acceptability of FP television message 0=No 1=Yes 2=Don't know or missing ***Acceptability of FP radio message 0=No 1=Yes 2=Don't know or missing *=use in univariate descriptive analysis only **=use in univariates and crosstabs ***=use in all statistical tests	Independent Variables: ***Heard about FP on the radio 0=No 1=Yes 2=Don't know or missing ***Heard about FP on television 0=No 1=Yes 2=Don't know or missing ***Acceptability of FP media message 0=No 1=Yes 2=Don't know or missing *=use in univariate descriptives only **=use in univariates and crosstabs ***=use in all statistical tests

All of the variables in Table 3.4 are included in all of the statistical tests. The informational access variables are of relevance not only due to their strength in examining where women receive their family planning knowledge but in addition, whether these women accept the messages as valid and act on those messages accordingly.

Any differentiation in the variables (and coding) themselves is due to the structure and format of the questions in the survey questionnaires. While the majority of the

questions and accordingly the variables are similar in both countries, the coding is not always the same, due to the previously discussed variation between the two areas. For example, religion cannot be coded exactly the same due to apparent differences in the religious makeup of both countries. Also, mode of transportation exhibits variance, again, due to perhaps discrepancies not immediately seen in the two areas under scrutiny. I contend that the statistical analyses may shed some light on the extent of these differences.

Methodology

In the forthcoming chapters, my statistical analyses will begin with univariate descriptives for both countries. Frequency distributions will be run as well as means and standard deviations. All variables in the previous lists will be included here.

Following this will be bivariate analyses attempting to show whether a relationship exists between pairings of the dependent and independent variables. This shall be done using crosstabulation, a statistical tool representing a frequency and percent table of two or more variables taken together. Independent variables to be utilized in this endeavor consist of: the majority of the demographic variables except those relating to household head and literacy (too highly correlated with education); all of the structural variables will be included; in the grouping of fertility variables, I shall only investigate wanted last child and fertility preference; and in the last set of informational access variables, all will be included as well.

Finally, it is my intention to run logistic regressions, the most suitable analytical strategy when the dependent variable is dichotomous, as is the case here . Coding the

dependent variable of contraceptive use in a dichotomous manner (1=use, 0=non-use), I will run multivariate logistic regressions with the following independent variables: most of the demographic variables except literacy (too highly correlated with education) and the household head variables; the majority of the structural variables; variables associated with fertility will consist only of wanted last child and fertility preference; and the informational access variables shall include the knowledge variables as well as acceptability of family planning messages and the source of such information. This strategy transforms the dependent variable into a log odds ratio, with the odds of using contraception being contrasted with the odds of not using contraception. Coefficients are derived using a log-likelihood procedure that produces coefficients representing the best possible prediction of the log-odds ratio.

With continuous variables, such as age and distance, the coefficient is interpreted as a one unit change in age (or distance) bringing about a "b" change (representing the beta coefficient) in the log odds of using contraception. With categorical variables (all of which are coded as dummy variables for the logistic analysis), the coefficient is interpreted as the comparison of the log odds ratios when the variable is equal to one versus when it is equal to zero.

It is my intention then that through these statistical analyses I will show not only how much contraception is being used in both countries of Indonesia and the Philippines but what variables account for any differences that may occur. The utilization of univariate descriptives followed by bivariate crosstabulations and finally multivariate

logistic regressions facilitates not only an image of each country under investigation but to what degree each individual variable acts on contraceptive use (where applicable).

CHAPTER 4

COMPARATIVE UNIVARIATE DESCRIPTIVES

The 1993 data from the Philippino DHS as well as the 1994 Indonesian DHS data coalesce into an introductory comparative representation of the fertility and child bearing behaviors at the time the interviews were done. I will begin my analysis by examining the variables that are of importance in this study in a descriptive way. To do this, I will examine the univariate distributions of key variables, and mean scores where means are applicable. I will be looking at the two countries separately and comment on appreciable differences found between them, as well as other instances of interest. I report several lengthy tables in this chapter, but only discuss the most relevant findings.

Table 4.1 describes the findings from the univariate frequency distributions of the variables. Mean scores and standard deviations are included.

Table 4.1: Demographic Frequency Distributions

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Age			Age		
15-19 years	134	1.8	15-19 years	1035	4.0
20-24 years	918	12.7	20-24 years	3753	14.3
25-29 years	1425	19.7	25-29 years	5320	20.3
30-34 years	1517	21.0	30-34 years	5354	20.4
35-39 years	1365	18.9	35-39 years	4693	17.9
40-44 years	1118	15.4	40-44 years	3328	12.7
45-49 years	759	10.5	45-49 years	2737	10.4
Mean=33.58			Mean=32.60		
Stand.dev.=7.90			Stand.dev.=8.21		
Type of residence			Type of residence		
Urban (=0)	3237	44.7	Urban (=0)	7393	28.2
Rural (=1)	3999	55.3	Rural (=1)	18827	71.8
Mean=.55			Mean=.72		
Stand.dev.=.50			Stand.dev.=.45		
Educational Level			Education Level		
No education	203	2.8	No education	4240	16.2
Primary	2980	41.2	Primary	14204	54.2
Secondary	2406	33.2	Secondary	7008	26.7
Higher	1647	22.8	Higher	768	2.9
Literacy			Literacy		
Can read	6819	94.2	Can read	20598	78.6
Cannot read	372	5.8	Cannot read	5622	21.4
Religion			Religion		
Roman Catholic	5852	80.9	Muslim	20487	78.1
Protestant	230	3.2	Protestant	2284	8.7
Islam	310	4.3	Catholic	1892	7.3
Other	844	11.6	Hindu	1226	4.7
			Buddhist	243	.9
			Other	88	.3

Table 4.1, continued

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Marital Status			Marital Status		
Married	7,236	100	Married	26,220	100
Age at first marriage			Age at first marriage		
8-14 years	229	3.2	10-15 years	6160	23.5
15-20 years	3895	53.8	16-21 years	14927	56.9
21-26 years	2461	34.0	22-27 years	4542	17.3
27-32 years	543	7.5	28-33 years	496	1.9
33-38 years	93	1.3	34-39 years	88	.4
39-45 years	15	.2	40-45 years	7	.0
Mean=20.52			Mean=18.44		
Stand.dev.=4.24			Stand.dev.=3.94		
Age at first birth			Age at first birth		
10-15 years	186	2.6	11-15 years	2462	10.1
16-20 years	3045	42.1	16-20 years	12408	51.2
21-25 years	2578	35.6	21-25 years	7371	30.3
26-30 years	816	11.2	26-30 years	1699	7.0
31-35 years	182	2.5	31-35 years	279	1.2
36-40 years	42	.6	36-40 years	50	.2
41-45 years	6	.1	41-45 years	4	.0
Missing data	381	5.3	Missing data		
Mean=21.51			Mean=19.95		
Stand.dev.=4.13			Stand.dev.=3.89		
CEB			CEB		
0-3 children	3865	53.4	0-3 children	16,546	63.1
4-7 children	2687	37.1	4-7 children	8,151	31.1
8-11 children	614	8.5	8-11 children	1,426	5.4
12-16 children	70	1.0	12-16 children	97	.4
Mean=3.77			Mean=3.21		
Stand.dev.=2.55			Stand.dev.=2.33		

Table 4.1, continued

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Months of Contraceptive Use			Months of Contraceptive Use		
0-9 months	719	9.9	0-9 months	2842	10.8
10-19 months	423	5.8	10-19 months	1981	7.6
20-29 months	303	4.2	20-29 months	1600	6.1
30-39 months	245	3.4	30-39 months	1265	4.8
40-49 months	210	2.9	40-49 months	970	3.7
50-59 months	114	1.6	50-59 months	738	2.8
60-69 months	122	1.7	60-69 months	316	1.2
70+ months	822	11.4	70+ months	3980	15.2
DK/missing	4278	59.1	DK/missing	12528	47.8
Mean=51.47			Mean=70.30		
Stand.dev.= 54.24			Stand.dev.=37.78		
Rel. to HH head			Rel. to HH head		
Head	138	1.9	Head	245	.9
Wife	6072	83.9	Wife	22615	86.3
Daughter	531	7.4	Daughter	1817	6.9
Daughter-in-law	312	4.3	Daughter-in-law	982	3.8
Granddaughter	20	.3	Granddaughter	44	.2
Mother	10	.1	Mother	25	.1
Mother-in-law	3	.0	Mother-in-law	35	.1
Sister	70	1.0	Sister	82	.3
Other	80	1.1	Other	375	1.4
Age of HH head			Age of HH head		
15-29 years	1453	20.1	16-30 years	4756	18.1
30-44 years	3739	51.7	31-45 years	13223	50.5
45-59 years	1610	22.2	46-60 years	6870	26.2
60-74 years	354	4.9	61-75 years	1247	4.7
75-90 years	74	1.0	76-90 years	112	.5
90+ years	6	.1	90+ years	12	.0
Mean=40.44			Mean=41.45		
Stand.dev.=11.59			Stand.dev.=11.29		

Table 4.1, continued

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Sex of HH Head			Sex of HH Head		
Male	6827	94.3	Male	25415	96.9
Female	409	5.7	Female	805	3.1

Demographic Analyses and Observations

Out of the females being interviewed in the Philippines, 34.2% are under the age of 30 (prime biological timespan for child bearing), while in Indonesia 38.6% of them are. Additionally, the mean ages of both countries are similar, with the Philippines being 33.58 years and Indonesia being 32.60 years. Indonesia is much more rural in nature than the Philippines with nearly 72% of the country defining themselves as rural while comparatively in the Philippines 55.3% consider themselves as such. Rural, in this context, is defined at the village level.

The women in the Philippines as a whole are more educated than those in Indonesia, but this fact is not inexplicable. 56% of women in the Philippines have secondary education or higher while in Indonesia that number is 29.6%. The discrepancy can be accounted for by history. The United States involvement in the Philippines during the colonial period allowed for an educational system that was far reaching and was disseminated into all areas of the country. This educational system and its inherent values on higher education still to this day are relevant for Philippinos. Additionally, while being highly correlated with education, literacy rates exhibit marked differences. While the

majority of women can read in both countries (94.2% in the Philippines and 78.6% in Indonesia), the illiteracy rate in the Philippines is 5.8%, while in Indonesia it is 21.4%.

Lastly, the final segment in the first part of Table 4.1 shows the religious diversity of the two countries being discussed. The majority of Philippinos are Roman Catholic, nearly 81%, with Islam being 4.3%, Protestant 3.2%, and "Other" 11.6%. Indonesia, however, claims a large Muslim population at 78.1% with Protestants 8.7%, Catholics 7.3%, Hindu 4.7%, and Buddhists and "Other" consisting of 1.2%.

In terms of my research questions focusing on issues of cost and access then, I speculate that physical access costs could come into play with contraceptive use due to the rural nature of Indonesia perhaps physically isolating women from family planning clinics. Informational access costs present a plausible concern due to the lower education and literacy rates overall in Indonesia, with over one-fifth of the female population in this study being illiterate. Psychological costs also could hinder use theoretically in both countries due to violations of religious norms about contraceptive use and social pressures for large families. These queries will be addressed in the upcoming statistical analyses through crosstabulations and logistic regressions.

As articulated in the previous chapter, all of the women in the survey sample (for the purposes of this research project) are married. Affiliated with marital status is age at first marriage. While more than half of the women interviewed had married between the ages of 15-21 in both countries, nearly one quarter had married before the age of 15 in Indonesia. The mean ages at first marriage do differ accordingly, 20.52 years in the Philippines and 18.44 years in Indonesia. In reference to the frequency distributions then,

a significant portion of women marry in the early timeframe of 10-15 years of age in Indonesia, with more than half falling into the 15-21 year spread for both countries, and then 34% of 21-26 year olds marrying in the Philippines, as compared to 17.3% in Indonesia.

Following age at marriage is age at first birth. While only 2.6% of women first gave birth between the ages of 10-15 years of age in the Philippines, 10.1% gave birth between the ages of 11-15 in Indonesia. While the female body is capable at that age of giving birth, the safest and best time (biologically) is actually when the majority of women in the study gave birth to their first child: 77.7% between the ages of 16-25 years in the Philippines and 81.5% in the same age bracket in Indonesia. John Bongaarts (1982:277) determined that "The mean age at marriage and the prevalence of permanent celibacy and marital disruption are the main determinants of the average proportion of reproductive years women spend in marriage. In populations with early and universal marriage the proportion of the potential reproductive years lost is typically one-fifth or less, but this proportion can approach one half in populations with late marriage and a high incidence of permanent celibacy." Thus, age at first birth is accordingly associated with age at first marriage, and will be lower if the age at first marriage is lower.

It may be expected, if following through the logic of this proximate determinants theory, that the number of children ever born will be higher where age at marriage is lower. This is not the case with the data seen here. In Indonesia, with a mean age at first marriage of 18.44 years, the mean children ever born (CEB) is 3.21. However, in the Philippines the mean age at first marriage is 20.52 years with a CEB of 3.77. It is my

hypothesis that one explanation for this anomaly could lie in the religiosity of the regions. Roman Catholics (Philippines) are known for their firm stance against the use of birth control while Muslims (Indonesia), while not wholly approving, use it willingly to space births. The reasoning behind these numbers shall be further investigated through upcoming crosstabulations.

The last section of Table 4.1 initially concerns itself with overall months a woman has continuously been using contraception, in its many forms (modern method, traditional, or folkloric). The mean time is higher for women in Indonesia, 70.30 months, with lower standard deviation as well, of 37.78 months. In the Philippines the mean time is 51.47 months with 54.24 months as the standard deviation.

The relationship to the household head shows that nearly 84% of the women in the Philippines are related to the household head through spousal relations (as a wife) while 86.3% are in Indonesia. Also, while 7.3% of women were daughters of the household head in the Philippines, 6.9% were in Indonesia. This variable could be of potential interest to researchers studying the movement patterns of women before and after marriage and the structure of families within households. However, not surprisingly, the vast majority of household heads were male, 94.3% in the Philippines and 96.9% in Indonesia. None of the above mentioned variables in this section will be of concern in my upcoming bivariate and regression statistical analyses.

We have found then that the Philippines consists of a more educated, urban, Roman Catholic population of women who are of similar "mean" age as the women in Indonesia who are less educated, more rural, and generally Muslim. The women marry

younger in Indonesia and thus give birth at a younger age, which follows logically. Although, the mean number of children ever born is less than that of the Philippines. One potential explanation I offered was the variable of religion playing a role via restricted use of contraceptives from a moral stance in the country of the Philippines. This can be examined further in the upcoming statistical analyses. Another potential reason for the discrepancy not easily tested due to the lack of data for this project is related to a woman's breast feeding patterns. Perhaps in the more rural areas women breastfeed their children longer. This acts as a natural form of contraception in that when a woman breastfeeds, her body postpones ovulation. It could be possible that the women in Indonesia engage in this practice for longer periods of time than the more urban women in the Philippines. In so doing, they are spacing their births which in the long run could account for the lower number of children ever born in their child bearing histories. However, as stated above, this potential hypothesis cannot be tested for in the context of this research project due to the lack of such data in my data sets.

Table 4.2 includes frequency distributions of use rates and other fertility variables to be included in other statistical analyses. This section is central to the theme of this thesis, contraceptive use.

Table 4.2: Contraceptive Use and Associated Factors

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Current use pattern			Current use pattern		
Using	2968	41.0	Using	13692	52.2
Not using	4268	59.0	Not using	12528	47.8
Current use by method type			Current use by method type		
No method	4268	59.0	No method	12528	47.8
Folkloric method	25	.3	Folkloric method	334	1.3
Traditional method	1118	15.5	Traditional method	614	2.3
Modern method	1825	25.2	Modern method	12744	48.6
Reason for current method			Reason for current method		
Rec. by FP worker	232	3.2	Rec. by FP worker	1087	4.1
Rec. by friend/rel.	121	1.7	Rec. by friend/rel.	353	1.4
Side effects (othrs)	554	7.6	Side effects(othrs)	3393	12.9
Convenience	649	9.0	Convenience	1891	7.2
Access/availability	66	.9	Access/availability	834	3.2
Cost	37	.5	Cost	599	2.3
Wanted perm.meth	541	7.5	Wanted perm.meth	699	2.7
Husband preferred	374	5.2	Husband preferred	324	1.2
Want more effect.	320	4.4	Want more effect.	2938	11.2
Other	60	.8	Other	548	2.1
DK/missing	4282	59.2	DK/missing	13554	51.7
Intention to use			Intention to use		
In next 12 months	1052	14.6	In next 12 months	3416	13.0
Use later	233	3.2	Use later	1166	4.5
Unsure re: timing	36	.5	Unsure re: timing	285	1.1
Unsure re: use	167	2.3	Unsure re: use	2052	7.8
Do not intend	2737	37.8	Do not intend	5535	21.1
DK/missing	3011	41.6	DK/missing	13766	52.5

Table 4.2, continued

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Prob.w/curr.methd.			Prob.w/curr.methd		
No problem	2714	37.5	No problem	12552	47.9
Husband disapprv.	6	.1	Husband disapprv.	5	.0
Access/availability	1	.0	Access/availability	7	.0
Costs too much	1	.0	Costs too much	13	.1
Inconvenient use	23	.3	Inconvenient use	26	.1
Other	209	2.9	Other	128	.5
DK/missing	4282	59.2	DK/missing	13489	51.4
Reason not to use			Reason not to use		
Wants children	518	7.2	Wants children	998	3.8
Lack of knowledge	182	2.5	Lack of knowldge	193	.7
Oppose FP	93	1.3	Oppose FP	1005	3.8
Costs too much	15	.2	Costs too much	24	.1
Side eff/hlth.prblm	850	11.7	Side eff/hlth.prblm	998	3.8
Hard to get mthds.	11	.2	Hard to get mthds.	19	.1
Religion	152	2.1	Religion	42	.2
Difficult to get prg	503	7.0	Difficult to get prg	355	1.4
Menopsl/hysterect.	307	4.2	Menopsl/hysterect	893	3.4
Inconvenient use	54	.7	Inconvenient use	10	.0
Other	39	.5	Other	945	3.6
DK/missing	4512	62.4	DK/missing	20738	79.1
Wanted last child			Wanted last child		
Wanted then	2318	32.0	Wanted then	11288	43.0
Wanted later	1213	16.8	Wanted later	1089	4.2
Wanted no more	907	12.5	Wanted no more	1060	4.0
DK/missing	2798	38.7	DK/missing	12783	48.8
Fertility preference			Fertility preference		
Have another	1948	26.9	Have another	10988	41.9
Undecided	432	6.0	Undecided	1588	6.0
No more	4832	66.8	No more	13625	52.0
DK/missing	24	.3	DK/missing	19	.1

Commentary on Contraceptive Use Patterns

The variables under scrutiny in Table 4.2 detail contraceptive use patterns and problems associated with use as well as fertility/child bearing preferences for the women interviewed in this study. These trends will further be assimilated into a clearer picture of contraceptive and fertility behaviors in the crosstabulations to be presented in the following chapter.

Beginning with current use of contraception in the first segment of the table, the discrepancy noted on use is of relevance yet not unexpected in the analysis. Only 41% of women are currently using contraception in the Philippines with 59% having never used it before. In contrast, 52.2% of women currently use and 47.8% have never used in the country of Indonesia. Some demographic variables presented in Table 4.1 may explain the differences in use such as religion (as detailed in Chapter 2 literature review). Further speculation could point to the historical development of the family planning program in Indonesia allowing for a higher saturation level of contraceptive acceptance and use in that country. In the Philippines, as discussed in the Chapter 3 study setting section, the Catholic Church with the aid of the government has stalled the development of such programs in their country. While the degree of impact religion has on contraceptive use shall be tested in the upcoming crosstabulations and eventual logistic regressions, the cultural and political niche is much more difficult to test for in this particular case due to lack of measured variables.

Additionally, while only 25.2% of women use a modern method of birth control in the Philippines, 48.6% use the same type of method in Indonesia. 15.5% of women use a

traditional method of contraception in the Philippines whereas only 2.3% use in Indonesia.

9% use their current method because of the convenience of it in the Philippines but only 7.2% do so in Indonesia. Access and availability, however, constitute only .9% of reason of use in the Philippines with 3.2% in Indonesia. These terms and their definitions could be relative from country to country. While a method may not exactly be convenient to acquire in Indonesia, it could be readily available and accessible. What specifically constitutes convenient as compared to accessible and available is not defined in the survey questionnaires. Cost only accounts for .5% of usage in the Philippines but 2.3% in Indonesia. In this context, however, they are referring to financial cost only. Yet this could include the costs relating to transportation or lost employment hours in obtaining the method of contraception. It is important to note, for this question on reason of method, that over half the respondents either didn't know an answer or refused to answer. Unanswered questions (item nonresponse) frequently do not occur at random. Respondents may be reluctant to answer particular questions (for example, some contraceptive and sexual behavior questions could be viewed as sensitive items by many respondents). Some items may be sensitive but also difficult to answer. Additionally, some interviewers may be averse to asking certain questions or unwilling to prod reluctant respondents to answer them. Confidentiality of the respondent may be an imagined risk as well as unwillingness or inability to answer (Czaja and Blair 1996). These issues should be kept in mind as further significant nonresponse rates come into play.

Side effects (of other methods) account for 7.6% of method choice in the Philippines with 12.9% in Indonesia. Finally, while 21.1% of Indonesians and 37.8% of

Philippinos do not intend to use contraception in both countries, 13% of women in Indonesia do plan to use in the next 12 months as well as 14.6% in the Philippines. As noted in the previous paragraph, there is a 41.6% nonresponse in the Philippines for this question with 52.5% nonresponse in Indonesia.

Shifting now to the second portion of Table 4.2, problems with the current method of contraception explain only a small percentage of perhaps why women do not use. 47.9% of women in Indonesia have no problem with their current method whereas 37.5% of women in the Philippines claim the same. Access/availability concerns, cost issues, and inconvenient use are so trivial in the percentages as to not even warrant one-half a percent in each country. However, it should be noted that these are problems associated with current method, which apparently most women are quite content with (due to percentage of women who claim no problem with current method). Also, as with other questions in this section, the nonresponse rates are significant, with 59.2% in the Philippines and 51.4% in Indonesia.

The reasons for not using a birth control method that most women cite are medical side effects or potential health problems (11.7% in the Philippines and 3.8% in Indonesia). Other relevant issues include wanting more children (3.8% in Indonesia with 7.2% in the Philippines) . In the Philippines 2.1% of non-use of a method is explained by religious dogma with only .2% in Indonesia. However, as with nonresponse concerns, religion could be a sensitive issue with many women who live in these areas and this could effectively conceal their true feelings on this matter. Opposition to contraception is noted as 1.3% in the Philippines and 3.8% in Indonesia. 7.0% of women in the Philippines state

they do not use a method because it is difficult for them to get pregnant whereas only 1.4% of women state the same in Indonesia. Nonresponse rates are quite high in this section with 62.4% nonresponse in the Philippines and 79.1% in Indonesia.

Lastly, while 43% of women in Indonesia were content with the timing of their last child, only 32% of women in the Philippines were. Additionally, 12.5% of Philippino women wanted no more children at the time their last child was born and only 4% of Indonesian women felt the same. This coupled with the fact that more women use contraceptives in Indonesia (52.2%) than in the Philippines (41%) means that Indonesian women have greater control over their own fertility. Also, nearly 42% of Indonesian women want to have another child with about 27% of Philippino women wanting the same. Indonesian women then not only have more control over their own fertility as compared to women in the Philippines but they also have more determination over their birth history. This then gives women more autonomy in their lives to make decisions on the size of their families. These findings coupled with the knowledge of a superiorly developed family planning program system in the country of Indonesia begin to shed light on the major differences between these two countries with respect to contraception.

This section has reflected some fundamental differences between the two countries and justifies treating them separately in the analysis. It highlights the fact that contraceptive use differs between Indonesia and the Philippines and that there are legitimate differences in the reasons for using and not using contraception. Therefore, despite the close proximity of these countries to each other as well as the relative similarities in socioeconomic development, there are major differences in contraceptive

use. Much of the remaining part of the thesis will be devoted to ascertaining why these discrepancies exist.

Table 4.3: Physical Access to Family Planning/Methods

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Time to get to source			Time to get to source		
0-14 minutes	2875	39.7	0-14 minutes	3386	12.9
15-29 minutes	1213	16.8	15-29 minutes	5133	19.6
30-59 minutes	1297	17.9	30-59 minutes	4900	18.7
60-89 minutes	496	6.9	60-89 minutes	2948	11.2
90+ minutes	407	5.6	90+ minutes	7738	29.5
DK/missing	948	13.1	DK/missing	2115	8.1
Difficult to get to source			Difficult to get to source		
Easy	5738	79.3	Easy	15732	60.0
Difficult	369	5.1	Difficult	936	3.6
DK/missing	1129	15.6	DK/missing	9552	36.4
Transport used to get to method			Transport used to get to method		
Walked	453	6.3	Walked	424	1.6
Personal vehicle	144	2.0	Land motorized	19903	75.9
Hired vehicle	195	2.7	Water motorized	2435	9.3
Public transport	942	13.0	Land non-motor	1059	4.0
Other	32	.4	Water non-motor	16	.1
DK/missing	5470	75.6	Other	244	.9
			DK/missing	2139	8.2
Distance to FP			Distance to FP		
0-14 km	5788	80.0	0-14 km	10878	41.5
15-29 km	1041	14.4	15-29 km	4103	15.6
30-44 km	307	4.2	30-44 km	2951	11.3
45-59 km	23	.3	45-59 km	1550	5.9
60-74 km	34	.5	60-74 km	1169	4.4
75-89 km	0	.0	75-89 km	656	2.5
90+ km	43	.6	90+ km	1832	7.0
DK/missing	0	.0	DK/missing	3081	11.8

Table 4.3, continued

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Has bicycle			Has bicycle		
Yes	1646	22.7	Yes	12561	47.9
No	5554	76.8	No	13636	52.0
Missing	36	.5	Missing	23	.1
Has motorcycle			Has motorcycle		
Yes	491	6.8	or motorboat		
No	6709	92.7	Yes	5179	19.8
Missing	36	.5	No	21000	80.1
			Missing	41	.1
Has vehicle/car					
Yes	346	4.8	Has vehicle/car		
No	6852	94.7	Yes	1179	4.5
Missing	38	.5	No	24995	95.3
			Missing	46	.2

Postulates on Physical Access to Contraception

This section is relevant in terms of my hypothesis of physical access being significant in contraceptive use. I contend that the physical topography of the two countries, being archipelagan in nature, will exhibit an effect on access to a facility for the respondents. The physical access issue becomes problematic not only in terms of the structural components (the actual distribution of family planning centers throughout the islands) but in addition, through the manners in which women get to the facilities and how troublesome it is to get there. The level to which women need to disrupt their lives to get a contraceptive method will likely determine if it will be used or not. This descriptive analysis may begin to answer some of these questions about access.

Table 4.3 exhibits frequency distributions on the time it takes to get to a source of contraception/family planning. For more than half the study population in the Philippines and nearly a third in Indonesia, the time to source is less than thirty minutes. While not listed in the frequency distributions, the Philippines offers in this survey question the option of a mobile source, which would equate "0" for time to source. One would suspect the high level of rural development in Indonesia presents a prime target for additional mobile outreach programs for family planning, especially with almost a third answering that their time to source is over 90 minutes. However, associating difficulty to source with time to source, 60% of women in Indonesia say it is easy to get to a source with nearly 80% of women agreeing in the Philippines. It is plausible that the ease of getting to a source is not necessarily directly related to the time it takes to get there. This conjecture can be further explored through upcoming crosstabulations on use of contraception with these variables.

Additional "costs" associated with obtaining a method center around mode of transportation and distance parameters. Only 6.3% of women walked to get to a contraceptive method in the Philippines. However, a mere 1.6% walked in Indonesia. Nearly 76% of Indonesians use land motorized modes of transport to reach their destination. 13% of Philippino women use public transport as a mode of getting to a method. These factors hinting at partial restrictive mobility can additionally be explained due to nearly 77% of Philippino women being interviewed not owning a bicycle, 92.7% not owning a motorcycle, and 94.7% not owning a car. However, while 95.3% of Indonesian women in this study do not own a car and nearly 81% of them don't own a

motorcycle or motorboat, nearly 48% of them do have a bicycle (as compared to only 22.7% in the Philippines). This could allow for the fact that even though Indonesian women have to travel longer (time wise) to get to a method, 60% say it is easy to get there. In the context of this survey question, the nonresponse difference is noteworthy, 75.6% in the Philippines as compared to 8.2% in Indonesia. Further inquiries into the structure of the questionnaire itself give no clues as to this discrepancy. At this time then, an explanation for such a nonresponse error can only be speculation on the researcher's part.

In the Philippines, the more urban of the two areas, travel distance (as measured in kilometers) consists of 0-14 kilometers for 80% of the women being studied and 16-30 kilometers for 14.4%. Yet in Indonesia, only 41.5% are within 0-14 kilometers of a method and 15.6% within 16-30 kilometers. The longer distances are more of an issue to contend with for Indonesians, with 9.5% needing to travel more than 75 kilometers, in some cases, to reach family planning facilities. This pattern could be highly correlated with the time variable. It is not difficult to understand that if nearly 10% of the women need to travel over 75 kilometers in Indonesia to get to a method of contraception, it undoubtedly would take them longer than 90 minutes to do so. Concurrently, it was discussed in the literature review that distance to an abortion clinic did have a negative effect on the use of that facility (Shelton et al. 1976). This time/distance discrepancy will be further analyzed in the crosstabulations in Chapter 5.

It is quite apparent then from even these univariate descriptives that physical access plays a major role in the use of contraception. in terms of cost This can include

factors pertaining to availability of transportation (both personal ownership of it as well as public use of such either via public transportation or hiring of a vehicle), distance to a facility, ease of access, and time to reach a facility. Disparate levels of development within the two regions could possibly exacerbate the travel time to a facility as well as ease of access. This could pertain to road development as well as the physical topography itself. In the lesser developed areas, one may have no choice but to walk to a facility because the terrain is not conducive to any other type of transport. As with some other differences already surfacing in this analysis (children ever born as an example), questions about road development are not asked in both DHS surveys. However, I suspect the crosstabulations and logistic regressions will make clearer the effects physical access potentially has on contraceptive use.

Table 4.4: Informational Access to Contraception

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Knowledge of any method			Knowledge of any method		
Knows no method	219	3.0	Knows no method	1536	5.8
Knows folkloric	5	.1	Knows folkloric	71	.3
Knows traditional	12	.2	Knows traditional	24	.1
Knows modern	7000	96.7	Knows modern	24589	93.8
Know source for modern method			Know source for modern method		
Knows source	6743	93.2	Knows source	23312	88.9
Doesn't know src.	493	6.8	Doesn't know src.	2908	11.1
Read newspaper once a week			Read newspaper once a week		
Yes	4541	62.8	Yes	6922	26.4
No	2679	37.0	No	19272	73.5
Missing	16	.2	Missing	26	.1
Watches television every week			Watches television every week		
Yes	4409	60.9	Yes	17318	66.1
No	2811	38.9	No	8867	33.8
Missing	16	.2	Missing	35	.1
Listens to radio every week			Listens to radio every day		
Yes	6315	87.3	Yes	13990	53.4
No	914	12.6	No	12222	46.6
Missing	7	.1	Missing	8	.0
Has television			Has television		
Yes	2869	39.7	Yes	10578	40.3
No	4329	59.8	No	15628	59.6
Missing	38	.5	Missing	14	.1

Table 4.4, continued

	The Philippines N=7,236			Indonesia N=26,220	
	Frequency	Valid %		Frequency	Valid %
Heard FP message on radio			Heard FP message on radio		
Yes	3152	43.5	Yes	6898	26.3
No	4071	56.3	No	19312	73.7
DK/missing	13	.2	DK/missing	10	.0
Heard about FP on television			Heard about FP on television		
Yes	2091	28.9	Yes	10106	38.5
No	5115	70.7	No	16100	61.4
DK/missing	30	.4	DK/missing	14	.1
Acceptability of FP media message			Acceptability of FP radio message		
Not acceptable	440	6.1	Not acceptable	9684	36.9
Acceptable	6290	86.9	Acceptable	16515	63.0
DK/missing	506	7.0	DK/missing	21	.1
			Acceptability of FP television message		
			Not acceptable	7694	29.3
			Acceptable	18507	70.6
			DK/missing	19	.1

Introspective Analysis of Informational Access

Table 4.4 introduces one of the psychosocial approaches to interpreting contraceptive use. Postulating that as information flows to many through various media and other "channels" of communication, the idea of contraception will be ingrained in the minds of viable consumers, as it were. This information then gets shared by word of

mouth, and finally, use rates should eventually increase. For example, in the table, 96.7% of Philippinos know of modern birth control with only 3% knowing no method. However, nearly 7% of these women who know of a modern method don't know a source for it. In Indonesia, similar trends occur with 93.8% of women knowing a modern method, 5.8% knowing no method, and of the women who are familiar with modern forms of contraception, 11.1% don't know of a source.

The majority of women in both countries are exposed to mass media (in this survey I concentrate on the print media of newspapers, television, and radio) and thus one of the questions posed to women is the level of acceptance of family planning messages through these mass media. Almost 63% of women in the Philippines read a newspaper every week whereas 26.4% do the same in Indonesia. However, while almost 61% watch television every week in the Philippines 66.1% watch in Indonesia. Additionally, while 87.3% of women listen to the radio every week in the Philippines 53.4% of women listen to the radio every day in Indonesia. Apparently Philippinos get more of their news from the newspaper than television but only fractionally. Yet in Indonesia many more people watch television than read the newspaper, which could be a result of the higher rates of illiteracy in the country and lower levels of schooling overall for the women in the study. More women listen to the radio every week in the Philippines (87.3%). A discrepancy is that the "radio" question is not exactly equivalent between the two countries which is due to differences in the survey questionnaires themselves. But 53.4% of women listen to the radio every day in Indonesia. The rates are nearly identical on television ownership with 59.6% owning a t.v. in Indonesia with 59.8% owning one in the Philippines.

While almost 44% of the women surveyed in the Philippines have heard a family planning message on the radio, only a little over a quarter have in Indonesia. Yet 38.5% of Indonesians have heard about family planning on television with 28.9% of Philippinos having heard about it through the same venue. Nearly 87% find them acceptable in a general sense in the Philippines. Further detailed questions in the Indonesian survey show that 63% find family planning messages on the radio acceptable with almost 71% finding them acceptable on television. The reasoning behind this discrepancy could be twofold. First, each individual woman likely reacts differently than others when confronted with certain messages in their society. Some may find such advertising perfectly reasonable while others may be offended and shocked. Secondly, religious considerations could play a major role. Even as the Philippinos slant heavily towards the Catholic faith, many of them, as a country specific group, are more urban and likely more modern in a general sense than the Muslim majority in Indonesia. The breaking of religious norms may be more visible in a rural area than in a modern, urban one. Information sharing is at work here but in addition an ebb and flow of cost (of not knowing a source of a method one might want to use).

Apparently more women in Indonesia get their family planning news from the radio and television than they do from newspapers and find both venues acceptable for family planning messages. Again, this could reflect lower literacy rates than the comparative country of the Philippines. In the Philippines, more women do read the newspaper for news and information but they also watch television and listen to the radio. Most of the women find the media messages advertising family planning generally acceptable but in

Indonesia, more women find family planning messages more acceptable on television than they do on the radio.

This chapter provides a descriptive overview of the two countries I am researching for the use of contraception. Each country seems to have a predominant religion and exhibits as many differences as similarities. While both Indonesia and the Philippines display similar socioeconomic development levels (as discussed in the previous chapter) and physical topographies (island nations), they otherwise are quite different. The Philippines as a country is much more urban and educated than Indonesia which would normally lend itself (presumably) to increased contraceptive use. Yet this is not the case. Indonesia is much more rural of a country, not as well educated, and apparently more spread out in terms of placement of family planning facilities (if judging from time and distance to a facility). However, as a group, Indonesian women use contraception more. This noted difference in use answers one of my key hypotheses and further statistical analyses shall attempt to explore how much effect the independent variables have on the dependent variable of use of contraception.

CHAPTER 5

BIVARIATE DESCRIPTIVE STATISTICS: CROSSTABULATIONS

I continue my data analyses by further examining the variables that are of importance in this study descriptively. To do this, I will examine the bivariate distributions of key variables through the use of crosstabulation, a statistical procedure which shows the presence or absence of a relationship between the variables under scrutiny through the application of frequency and percent tables run in SPSS. I will be looking at the two countries separately and comment on appreciable differences found between them, as well as other relevant findings. The crosstabs will mainly show the percentages of each independent variable as it exists in relation to the dependent variable of contraceptive use. As with Chapter 4, I report several lengthy tables in this chapter, but only discuss the most critical results.

Every crosstabulation run in this chapter has been tested for statistical significance utilizing a Chi square. Every result (except one) ended in the crosstabulations being statistically significant to the $p<.05$ level, meaning that there is a 95% chance that there is an effect and that the results are not due to sampling error or chance. The only crosstabulation not statistically significant is the 3 way crosstabulation for the Philippines of place of residence (urban/rural) with distance with contraceptive use. This tendency is marked in the table with the results.

Table 5.1: Results of Demographic Variable Crosstabs

The Philippines N=7,236		Indonesia N=26,220	
Independent Vars.	Using Contr.	Independent Vars.	Using Contr.
Age (in 5 yr. groups)		Age (in 5 yr. groups)	
15-19 years	20.1%	15-19 years	31.8%
20-24 years	32.5%	20-24 years	49.8%
25-29 years	40.2%	25-29 years	54.8%
30-34 years	45.7%	30-34 years	58.8%
35-39 years	50.0%	35-39 years	59.4%
40-44 years	44.2%	40-44 years	53.3%
45-49 years	26.4%	45-49 years	31.6%
Residence:		Residence:	
Urban	44.6%	Urban	59.0%
Rural	38.1%	Rural	49.6%
Education:		Education:	
No education	8.9%	No education	36.9%
Primary	34.8%	Primary	52.5%
Secondary	45.8%	Secondary	60.1%
Higher	49.3%	Higher	59.1%
Religion:		Religion:	
Catholic	42.2%	Muslim	53.0%
Protestant	44.8%	Protestant/Christian	51.9%
Islam	10.6%	Catholic	34.4%
Other	42.8%	Hindu	67.5%
		Buddhist	55.1%
		Other	39.8%

Table 5.1, continued

The Philippines N=7,236		Indonesia N=26,220	
Independent Vars.	Using Contr.	Independent Vars.	Using Contr.
Children Ever Born		Children Ever Born	
0	1.8%	0	4.5%
1	27.6%	1	50.4%
2	44.5%	2	62.8%
3	52.8%	3	64.3%
4	52.4%	4	59.6%
5	49.6%	5	55.9%
6	41.5%	6	48.8%
7	37.5%	7	44.4%
8	35.5%	8	39.1%
9	25.5%	9	33.3%
10	12.7%	10	28.7%
11	16.4%	11	27.6%
12	28.6%	12	19.1%
13	42.1%	13	25.0%
14	25.0%	14	11.1%
15	0%	15	0%
16	0%	16	0%

Demographic Variable Crosstabulations

This section begins by analyzing the disparities observed in the countries of Indonesia and the Philippines within the demographic variables in terms of contraceptive use. The demographic variables include "Age", "Type of residence", "Educational level", "Religion", and "Children ever born". These common indicators have been shown in the body of literature to have significant effects on contraceptive use and therefore are examined here.

As with the frequency distribution of use of contraception in the previous chapter, Indonesia's use is higher than that of the Philippines. It is higher in every age bracket in

the table. Peak use, however, falls exactly into the same range of years for both countries, between 30-39 years of age. This is understandable, considering the mean age at first birth for Indonesians is 19.95 years and 21.51 years for those in the Philippines. Given nearly 20 years to maximize the opportunities for peak fecundity (ability to conceive), one might assume that women in their 30s would be ready to use contraception if they haven't done so already. John Bongaarts argues this exactly in his proximate determinants theory (discussed in the previous chapter). Yet the largest variation in use is in the age range of 20-24 years, with 32.5% of Philippinos and 49.8% of Indonesians using, a difference of 17.3%. This discrepancy could either be due to lower age of marriage for women in Indonesia thus warranting earlier use of contraceptives or is just indicative of the higher use rates overall, which likely reflects a multitude of factors acting together to promote such use. Of those using in the measured residential areas, the lower rural use in Indonesia (49.6%) is still more than the highest use measured in Philippino urban areas (44.6%).

Even the women with no education in Indonesia use contraception (36.9%) more than women in the Philippines with at least a primary education (34.8%). Otherwise, the use rates do increase as education increases (a near universal finding in contraceptive use literature, as denoted in Chapter 2). However, in Indonesia the shift from secondary education to higher exhibits a drop in use rates by 1%. While use peaks in the Philippines for women with higher education levels (49.3%), secondary education falls into that niche in Indonesia with 60.1% of women using contraception.

Of the religious majority of Philippinos (80.9% Roman Catholics), 42.2% are currently using contraception, while 44.8% of Protestants and 10.6% of those who claim Islam as their religion (Muslim, or of the nation of Islam) do so. 42.8% of people in the Philippines who claim "Other" religions use, but this grouping would include Aglipay , Iglesia ni kristo , as well as lesser known tribal and animistic religions. Of the Muslims in Indonesia (the spiritual majority with 78.1%), 53% use contraception. This reflects a higher use rate than the religious majority in the Philippines, but it does not exceed those of other religious beliefs in its own country; Hindus lead in use rates with 67.5% with Buddhists following with 55.1%.

The variable "Children ever born" is a plausible indicator explaining the use of contraception to either space births or stop them. Generally one would assume that if a woman has had few children she would be less inclined to use birth control, and the more children she has, the more motivated she would be to use. This seems to be the case in both Indonesia and the Philippines but the trend plays out differently. While use patterns are low to non-existent on both ends of the range (0 children and 15-16 children), the majority of women are inclined to use in the first quartile. However, in Indonesia, more women tend to use when they've had between two to four children, whereas in the Philippines, they use when they've had between three to five. Use continues to fall after having had five children in both countries but then peaks again at 13 children. The percentage of women using at child #13 is significantly higher in the Philippines than in Indonesia (17.1% higher). This could be a result of women in the Philippines not only having a higher mean # of children ever born (3.77 versus 3.21 in Indonesia), but in

addition, having almost ten percent of the women surveyed in that region having had over 8 children at the time the interview was conducted.

This section then compared use percentages in both countries of the demographic variables under scrutiny. In both Indonesia and the Philippines, urban use was generally significantly higher than rural use. Also, most women tended towards contraceptive use in their mid twenties to late thirties. This trend is likely associated with the use patterns for the variable CEB (Children ever born). While education did, as expected, show positive correlation with use, what differed most about the use rates was the group with no education. That segment of the Indonesian population not only use more than the "no educations" in the Philippines, they use contraception more than the "primary" group in the opposing country as well. Religion, one of the key elements of interest in my research endeavor, established some interesting differences. The Catholics in the Philippines use more (42.2%) than their counterparts in Indonesia (34.4%), while the Muslims in Indonesia (53%) use more than those of the same faith in the Philippines (10.6%). It is my intention to explore this distinction in further detail not only through more detailed crosstabulations but in addition the logistic regressions in the next chapter. While the relevance of proximate determinants is expressed here through their direct effects on contraceptive use, costs related to use are also inherently observed. In this section, however, the costs could include psychological costs affiliated with a breach in religious norms and values, social costs of not having a large family (if valued), as well as financial costs of not having many children (lack of financial support in old age and consistent contributors to household labor).

Table 5.2: Results of Fertility Variable Crosstabs

The Philippines N=7,236		Indonesia N=26,220	
Independent Vars.	Using Contr.	Independent Vars.	Using Contr.
Wanted last child		Wanted last child	
Wanted then	37.6%	Wanted then	55.9%
Wanted later	44.4%	Wanted later	65.8%
Wanted no more	45.3%	Wanted no more	62.3%
Fertility preference		Fertility preference	
Have another	28.0%	Have another	43.6%
Undecided	26.9%	Undecided	41.8%
Have no more	47.6%	Have no more	60.4%

Fertility Variable Crosstabulations

For the purposes of this section, the majority of the fertility variables discussed in the previous chapter (univariate descriptive frequencies) are not included for analysis. The rationale behind this decision is in respect to redundancy errors. It is nonsensical to examine the percentages of "Reason for current method" on use of contraception, because if you are stating the reason for use, you are already using. Therefore, this and other variables (included in Table 4.2) are not in the crosstabulations. The only variables selected for these analyses are "Wanted last child" and "Fertility preference". These two are prime indicators if a woman will be using contraceptives or not, reflecting the control a woman has over her own body and her reproductive health in terms of future child bearing behaviors.

The differences in use patterns between countries are again apparent in the crosstabs for "Wanted last child" and "Fertility preference". 37.6% of women in the

Philippines who wanted their last child at that time are currently using contraception while 55.9% of Indonesian women are doing the same. However, 44.4% of Philippino women are currently using if they wanted their last child at a later time and 65.8% of Indonesians in the study duplicate those actions. Yet if Indonesian women didn't want any more children at the time of their last child, 62.3% currently use contraception with 45.3% of the Philippino women following suit. Concurrently, if women in the Philippines want to have another child, 28% currently use; if they are undecided, 26.9% use, and if they want to have no more children, 47.6% use. But in Indonesia, desire for another child reflects 43.6% current use, undecided 41.8% use, and wanting to have no more children, 60.4%.

This section explored the connection between use rates and desires for "last child" and additional children. These rates hark back, again, to Bongaarts' theory of proximate determinants concerning children ever born and contraceptive use. In both cases (of "wanted last child" and "fertility preference"), if women want no more children, then higher use rates are seen in Indonesia, reflecting more control over their own birth histories and reproductive lives. This then would play a dramatic role on the demand of contraceptives in an area and could also plausibly indicate that demand predetermines accessibility (and supply) and following this, use. These two variables, along with the demographic ones in the previous section, will be included in upcoming multivariate logistic regressions to further understand the effect they have on contraceptive use.

Table 5.3: Results of Physical Access Variable Crosstabs

The Philippines N=7,236		Indonesia N=26,220	
Independent Vars.	Using Contr.	Independent Vars.	Using Contr.
Time to source		Time to source	
0-14 minutes	39.4%	0-14 minutes	59.1%
15-29 minutes	43.9%	15-29 minutes	55.7%
30-59 minutes	47.9%	30-59 minutes	53.3%
60-89 minutes	57.5%	60-89 minutes	51.6%
90+ minutes	58.5%	90+ minutes	47.8%
Difficult getting to source		Difficult getting to source	
Easy	44.2%	Easy	59.0%
Difficult	40.7%	Difficult	38.9%
Distance to FP		Distance to FP	
0-14 km	42.1%	0-14 km	56.3%
15-29 km	35.4%	15-29 km	53.2%
30-44 km	37.5%	30-44 km	50.6%
45-59 km	26.1%	45-59 km	48.5%
60-74 km	41.2%	60-74 km	51.2%
75-89 km	0.0%	75-89 km	46.6%
90+ km	60.5%	90+ km	48.9%
Has bicycle		Has bicycle	
Yes	46.7%	Yes	57.2%
No	39.4%	No	47.6%
Has motorcycle		Has motorcycle/boat	
Yes	55.4%	Yes	61.3%
No	40.0%	No	50.0%
Has vehicle/car		Has vehicle/car	
Yes	48.0%	Yes	62.8%
No	40.7%	No	51.7%

Physical Access Variable Crosstabulations

This section concerns itself with the physical access components of contraceptive use and is one of the central thematic hypotheses of this Masters thesis. The majority of variables are included for the crosstabulations: "Time to get to source", "Difficult to get to source", "Distance to FP", as well as the socioeconomic indicators of "Has bicycle", "Has motorcycle/motorboat", and "Has vehicle/car". However, as in the previous section on fertility variables, one variable in this case, "Transport used to get to method", is not included for the similar redundancy explanation. If you are using a particular type of transport to get your method of contraception, then you are, by default, using contraception. This section will begin to elucidate my study objective questions regarding physical access to contraception and family planning in both Indonesia and the Philippines.

An interesting pattern emerges from the crosstabulation on time and contraceptive use. In the Philippines, apparently, the longer it takes to get to the source of contraception, the more likely one is to use it. On the other hand, in Indonesia, the longer it takes, the less likely one is to use a method. Before the analysis I hypothesized that the longer it takes to get to a facility, the less likely one is to use it (as discussed in an abortion clinic study in Chapter 2 literature review). This is indeed the case in Indonesia, the more rural of the two countries. Of the women who say it is easy to get to the source of contraception, 59% of them use. Therefore, it could be surmised that shorter time equates with ease of access. This follows through in the following variable of distance. More than half the women in the study use contraceptives if the source is less than 44 kilometers away. Additionally, recall from Table 4.3 that nearly 76% of women use land motorized

transportation to get to their method of choice. A profile then begins to take shape on how the use patterns differ to such an extent in regards to time to source. Motorized land transport cuts the time significantly in getting to a contraceptive choice. Women in the Philippines either take public transportation or walk to get to their method. Another relevant point to keep in mind, however, is the availability of mobile sources of family planning and contraception in the Philippines, which is notably absent at the time of this study in Indonesia. Not only does this affect time, distance, and difficulty in getting to a source, it also possibly explains the near 76% nonresponse rate for the variable "Transport used to get to method". If there is a mobile unit locally, perhaps the women, instead of answering "Other", weren't quite sure how to answer the question, so they responded "Don't know". This of course is speculation on my behalf, but it lends credence to the argument here. Otherwise, we can also conclude then that in the Philippines, if a woman is willing to travel over 90 minutes to get to a source of contraception, she is highly motivated to use it.

Distance to family planning for both countries begins with an eventual decrease in use with another peak at 60 to 74 kilometers. This inverse relationship is typical in the contraceptive literature. However, as with time to source and use, of those who travel over 90 kilometers in the Philippines to get to a source of family planning, 60.5% are using contraception. This is higher than any of the figures associating use with distance in Indonesia. Again, if a woman is willing to travel over 90 kilometers to get a contraceptive method, she is highly motivated and likely to use. More women who have their own

modes of transportation are likely to use in Indonesia; with 57.2% who own a bicycle using, 61.3% who own a motorcycle or boat using, and 62.8% who own a car using.

This section describes the immediate effect that time and distance as well as ease of access have on use of contraceptives. Although, interesting trends emerge highlighting perhaps not discrepancies in use alone but possible differences in the infrastructures of the two differing countries. This would include disparate road development and access to transportation factors as well as alternate modes of delivery of family planning methods not immediately discovered in the original univariate descriptives. This could undoubtedly create discrepancies that initially, while seeming to be attributed to only one or two factors, in reality can only be explained by the interactions of many.

Table 5.4: Results of Informational Access Variable Crosstabs

The Philippines N=7,236		Indonesia N=26,220		
Independent Vars.	Using Contr.	Independent Vars.	Using Contr.	
Knows any method		Knows any method		
Knows no method	0.0%	Knows no method	0.0%	
Knows folkloric	20.0%	Knows folkloric	67.6%	
Knows traditional	33.3%	Knows traditional	62.5%	
Knows modern	42.3%	Knows modern	55.4%	
Knows source for modern method		Knows source for modern method		
Knows source	43.1%	Knows source	56.1%	
Doesn't know src.	12.0%	Doesn't know src.	21.1%	
Reads paper weekly		Reads paper weekly		
Yes	45.0%	Yes	61.3%	
No	34.3%	No	49.0%	
Watches t.v. weekly		Watches t.v. weekly		
Yes	45.7%	Yes	58.5%	
No	33.6%	No	40.0%	
Listens to radio weekly		Listens to radio every day		
Yes	42.3%	Yes	56.2%	
No	32.1%	No	47.6%	
Has TV		Has TV		
Yes	47.6%	Yes	60.7%	
No	36.7%	No	46.5%	
Heard FP on radio		Heard FP on radio		
Yes	43.9%	Yes	59.8%	
No	38.6%	No	49.5%	
Heard FP on t.v.		Heard FP on t.v.		
Yes	47.8%	Yes	61.5%	
No	38.2%	No	46.4%	
FP media mess.acc.		FP mess acc. (radio)		
Yes	44.3%	Yes/No (radio)	56.1%	45.7%
No	15.2%	Yes/No (t.v.)	56.5%	41.9%

Informational Access Variable Crosstabulations

This section of crosstabs shall explore the role information plays on use of contraception. It also is a significant query within my study objectives along with the previous section on physical access constraints. How does having medical knowledge affect our behaviors towards using that method/technology? While certain theoretical frameworks have investigated these trends (as seen in Chapter 2 literature review) such as the Health Belief Model and the Reproductive Health Awareness Model, these crosstabulations shall reflect the extent to which the women surveyed acted upon such reproductive knowledge as interpreted through contraceptive use.

Another inverse trend (as with the previous table on time to source) seems to occur in knowledge of any method and contraceptive use. The more urban Philippines has 20% of women using who know only folkloric methods, 33.3% using who know only traditional methods, and 42.3% using who know only modern methods. However, in the more rural Indonesia, the pattern reverses with 67.6% using who know only folkloric, 62.5% using who know only traditional, and 55.4% using who know only modern. While it is plausibly difficult to pinpoint the exact reason for this, I postulate that perhaps religion could be a factor as well as other sociocultural factors. The Philippines, which maintains a Catholic majority, is in itself a more urban country. Additionally, Catholics, as a group, having originated out of European origins (especially Spain), perhaps maintain a more "modern" world view of what are and are not acceptable forms of contraception, should they decide to use. Yet Muslims (aka Nation of Islam) claim origins from the Middle Eastern areas of the world. Perhaps their ideas about contraception, what is effective, not

effective, and acceptable, are different than those of Catholics. This scenario will be further examined when I explore the differences between Muslims and Catholics in both countries for use of contraception. Yet it will suffice here to say that a plausible explanation for the differing methods of use is strongly historical and cultural in nature. Additionally, in Indonesia, of those who know of a source for a modern method, 56.1% use, while in the Philippines, 43.1% use in the same context.

The women in the two countries appear to get their news and accordingly their world views from the same sources, but in differing amounts. This undoubtedly will affect not only if they are somewhat knowledgeable about family planning and know of sources where to acquire it but in addition what their opinions are on family planning and contraception. 61.3% of Indonesian women who read the newspaper weekly use contraception while only 45% of Philippinos do the same. 45.7% in the Philippines who watch television weekly use but 58.5% do so in Indonesia. Finally, 42.3% of women in the Philippines who listen to their radio weekly use contraception, while 56.2% of Indonesians do the same listening to their radios every day. As stated previously in the text, occasionally, exactly similar questions are not available in both surveys so attempts were made to find the closest match possible for comparative purposes. Perhaps it can be said looking at the different percentages between countries that even though Indonesia, taken as a whole, is less educated, literary, or urban than the Philippines; if the women gain access to these venues of information, they are more likely to use contraception than their Philippino counterparts. However, as with other findings, there are likely other confounding factors acting on use rather than just identifying one sole variable of effect.

Also, more Indonesian women who have heard family planning messages on the radio or television use contraception (59.8% and 61.5% versus 43.9% and 47.8% in the Philippines). Finally, more women than not who find the family planning messages acceptable use contraception, but as before, those numbers are higher in Indonesia.

This section analyzed the percentages of women using contraception in relation to the modes within which they learned about family planning and the world around them in general. These forms of mass media not only inform the women in this study though. Additionally, the media themselves help to shape and develop the opinions of these women. Taken in combination with many of the other demographic, sociocultural, and structural factors, I feel we can only begin to explore the information seeking and sharing behaviors of women in Indonesia and the Philippines in the context of contraceptive use for this study. The questions in the Demographic and Health Surveys are not necessarily conducive to such inquiry but are much more oriented towards a hands-on, service utilization and placement approach.

Table 5.5: 3-Way Crosstabulations of Selected Demographic Variables

	The Philippines N=7,236			Indonesia N=26,220	
Independent Vars.	Urban Use of Contr.	Rural Use of Contr.	Independent Vars.	Urban Use of Contr.	Rural Use of Contr.
Age			Age		
15-19 yrs.	15.6%	22.5%	15-19 yrs.	40.2%	30.1%
20-24 yrs.	36.2%	29.8%	20-24 yrs.	50.9%	49.5%
25-29 yrs.	43.2%	37.7%	25-29 yrs.	56.9%	53.9%
30-34 yrs.	46.1%	45.3%	30-34 yrs.	64.7%	56.4%
35-39 yrs.	54.2%	46.8%	35-39 yrs.	67.3%	56.1%
40-44 yrs.	50.6%	38.6%	40-44 yrs.	62.9%	49.2%
45-49 yrs.	31.4%	22.2%	45-49 yrs.	45.1%	26.8%
Religion			Religion		
Catholic	45.3%	39.5%	Muslim	59.1%	50.5%
Protestant	53.6%	41.0%	Prot./Chrstn.	58.2%	50.0%
Islam	11.1%	10.4%	Catholic	52.3%	30.6%
Other	46.7%	40.3%	Hindu	71.0%	66.6%
			Buddhist	56.6%	48.9%
			Other	45.5%	32.6%

Further Analyses of Demographic Variables

It is my intention in this section to discover if living in a rural or urban area will differentially affect use of contraceptives through the demographic variables of "Age" and "Religion". In this way, it will be feasible to examine if women of the same age group or same religiosity differentially use solely by their place of residence.

In the Philippines, urban use exceeds rural use in all age brackets except for the grouping of 15-19 year olds. In Indonesia, urban use exceeds rural use in all categories. The largest discrepancy found in the age categories within the two countries is in

Indonesia, where 45.1% of women aged 45-49 years old use contraception in an urban area while 26.8% of women in the same age group use in rural areas, an 18.3% difference.

Religion bears out some differences as well. While 45.3% of urban Catholic women in the Philippines use contraception, 52.3% of urban Catholic women in Indonesia use. 39.5% of rural Catholic Philippino women use whereas 30.6% of rural Catholic Indonesian women do the same. It is in this variation between rural and urban Catholics that Indonesia and the Philippines show their disparities. The distinction to be made here is that there is only a 5.8% change from urban to rural Catholics using contraception in the Philippines. However, that change then shifts to a 21.7% spread in Indonesia. The nuance between Indonesian and Philippino Muslims is not as dramatic, with a .7% variation in the Philippines with a 8.6% difference in Indonesia. I can only speculate that either Muslims as a group use contraception more readily whether in Indonesia or the Philippines; or, perhaps there is something specific about Indonesia (a country effect, as it were) itself that affects contraceptive use through the independent variables under scrutiny.

Table 5.6: 3-Way Crosstabulations of Selected Physical Access Variables

	The Philippines N=7,236			Indonesia N=26,220	
Independent Vars.	Urban Use of Contr.	Rural Use of Contr.	Independent Vars.	Urban Use of Contr.	Rural Use of Contr.
Time to get to source			Time to get to source		
0-14 mins.	40.2%	38.6%	0-14 mins.	60.5%	55.6%
15-29 mins.	45.3%	42.6%	15-29 mins.	59.1%	52.6%
30-59 mins.	57.6%	41.1%	30-59 mins.	56.0%	52.7%
60-89 mins.	73.8%	49.7%	60-89 mins.	58.8%	50.7%
90+ mins.	69.6%	52.9%	90+ mins.	52.0%	47.6%
Distance to get to source			Distance to get to source		
0-14 km.	45.2%*	39.0%	0-14 km.	59.6%	52.9%
15-29 km.	38.2%*	34.6%	15-29 km.	57.8%	52.7%
30-44 km.	45.1%*	35.9%	30-44 km.	53.8%	50.4%
45-59 km.	0.0%*	26.1%	45-59 km.	60.7%	48.1%
60-74 km.	31.3%*	50.0%	60-74 km.	41.6%	51.9%
75-89 km.	0.0%*	0.0%	75-89 km.	0.0%	46.6%
90+ km.	37.5%*	65.7%	90+ km.	42.6%	49.3%
Difficult to get to source			Difficult to get to source		
Easy	46.7%	42.0%	Easy	63.8%	56.9%
Difficult	57.5%	36.0%	Difficult	54.1%	37.8%
*p>.05					

Further Analyses of Physical Access Variables

It is my goal in this section to discover if living in a rural or urban area will differentially affect use of contraception through the physical access (or structural) variables of "time to source", "distance to source", and "difficult to get to source". In this

way, it will be possible to examine if time, distance, and ease of physical access distinctively affect use solely by place of residence.

In the first independent variable, time, we see a similar pattern emerging as before with the earlier crosstabulation of time with use. The longer it takes to get to a source, the more likely people will be to use contraception. That changes slightly in the grouping of "90+ minutes" in the urban segment of the Philippines. However, the trend remains in the rural areas. This tendency reverts when Indonesia is discussed. The longer it takes to get to a source, the less likely one is to use contraception. This is generally the case in both the urban as well as the rural areas.

There is no true distinct pattern of distance to a source predicting use through urban and rural residence. While it starts out in the Philippines as use going down as distance increases, it relapses back to high use at the 30-44 kilometer mark. Then it vacillates again repeatedly in its relationship (in both urban and rural areas). In Indonesia a similar trend occurs.

Finally, difficulty getting to the source of contraception predicts use through urban and rural residence in an interesting manner. While 57.5% of those in the urban Philippines use if it is difficult to get to the source, only 46.7% will use in the same area if it is easy to get to. Yet this is reversed in the rural areas of the Philippines where 42% will use if it is easy to get to but only 36% will use if it is difficult to reach. However, in Indonesia, in urban areas, 63.8% will use if it is easy to get to the source but only 54.1% will use if it is difficult. In the Indonesian rural areas 56.9% will use if it is easy to get to with 37.8% using if it is difficult. The largest variation noted in use is in the rural areas of

Indonesia with a 19.1% difference between those who use when it is easy to get to and those who use when it is difficult to get to.

This chapter has explored many different issues concerning use of contraception in a bivariate, descriptive manner. While some interesting anomalies have come to light especially in terms of time constraints, ease of access, transportation issues, differences in religion, fertility preferences in general, and type of residence, all acting on the use of family planning and contraceptives; some questions remain to be answered in terms of how much predictive effect do the independent variables have on the dependent variable. These questions will be addressed in the following chapter on multivariate logistic regressions. The majority of the variables in this analysis relate to Easterlin's framework on cost, supply, and demand of contraceptives affecting use while religion and residence fall under the rubric of the proximate determinants model by Bongaarts.

CHAPTER 6

MULTIVARIATE LOGISTIC REGRESSIONS

This chapter will introduce four models of multivariate logistic regression in order to examine the predictive effect the independent variables have on the dependent variable of contraceptive use. As discussed earlier in Chapter 3, this strategy transforms the dependent variable (coded dichotomously) into a log odds ratio, with the odds of using contraception being contrasted with the odds of not using contraception. Coefficients are derived using a log-likelihood procedure that produces coefficients representing the best possible prediction of the log-odds ratio.

With continuous variables, such as age and distance, the coefficient is interpreted as a one unit change in age (or distance) bringing about a "b" change (beta coefficient) in the log odds of using contraception. With categorical variables (all of which are coded as dummy variables for the logistic analysis), the coefficient is interpreted as the comparison of the log odds ratios when the variable is equal to one versus when it is equal to zero. All of the models take into account the problem of missing cases. Where applicable, the missing cases are removed from the pool of variables for the analysis.

A list follows describing all the variables involved in the four separate models. I then will introduce the models and explain the reasoning behind their development. Finally, the results of the models will be explored and discussed.

Model 1: Demographic Model for the Philippines

Rural=Rural or urban residence (0=Urban, 1=Rural)
Educdmy=Dummy variable for education (0=None, 1=Education)
Relig1=Protestant (Dummy Variable, Comp.=Catholic)
Relig2=Islam (Dummy Variable, Comp.=Catholic)
Relig3=Other (Dummy Variable, Comp.=Catholic)
Age=Age of respondent, in continuous #s
Chldbrn=Children Ever Born, in continuous #s (from 0-16)

Model 2: Fertility Model for the Philippines

Rural=Rural or urban residence (0=Urban, 1=Rural)
Educdmy=Dummy variable for education (0=None, 1=Education)
Relig1=Protestant (Dummy Variable, Comp.=Catholic)
Relig2=Islam (Dummy Variable, Comp.=Catholic)
Relig3=Other (Dummy Variable, Comp.=Catholic)
Age=Age of respondent, in continuous #s
Chldbrn=Children Ever Born, in continuous #s (from 0-16)
Fert1=Undecided on child (Dummy Variable, Comp.=Want another)
Fert2=No more children (Dummy Variable, Comp.=Want another)
Want1=Wanted last child later (Dummy Variable, Comp.=Wantd then)
Want2=Wanted no more kids (Dummy Variable, Comp.=Wanted then)

Model 3: Structural Model for the Philippines

Rural=Rural or urban residence (0=Urban, 1=Rural)
Educdmy=Dummy variable for education (0=None, 1=Education)
Relig1=Protestant (Dummy Variable, Comp.=Catholic)
Relig2=Islam (Dummy Variable, Comp.=Catholic)
Relig3=Other (Dummy Variable, Comp.=Catholic)
Age=Age of respondent, in continuous #s
Chldbrn=Children Ever Born, in continuous #s (from 0-16)
Distance=Distance to contraceptive source, in continuous #s
NT15_29=Dummy Distance Variable, Comp.=0-14 minutes
NT30_59=Dummy Distance Variable, Comp.=0-14 minutes
NT60_89=Dummy Distance Variable, Comp.=0-14 minutes
NT90P=Dummy Distance Variable, Comp.=0-14 minutes
Diff1=Dummy Variable for difficult to get to source (Comp.=Easy)
Bike1=Dummy Variable for has a bicycle (Comp.=No)
Motor1=Dummy Variable for has a motorcycle (Comp.=No)
Car1=Dummy Variable for has a car (Comp.=No)

Model 4: Informational Model for the Philippines

Rural=Rural or urban residence (0=Urban, 1=Rural)
Educdmy=Dummy variable for education (0=None, 1=Education)
Relig1=Protestant (Dummy Variable, Comp.=Catholic)
Relig2=Islam (Dummy Variable, Comp.=Catholic)
Relig3=Other (Dummy Variable, Comp.=Catholic)
Age=Age of respondent, in continuous #s
Chldbrn=Children Ever Born, in continuous #s (from 0-16)
Knmthd1=Knows folkloric method (Dmmy.Var., Comp.=No method)
Knmthd2=Knows traditional method (Dmmy. Var., Comp.=No methd)
Knmthd3=Knows modern method(Dummy Var., Comp.=No method)
Knmdrn=Knows source for modern method (0=No, 1=Yes)
Rdppr1=Reads paper weekly (Dummy Variable, Comp.=No)
TV1=Watches tv weekly(Dummy Variable, Comp.=No)
Radio1=Listens to radio weekly(Dummy Variable, Comp.=No)
HasTV1=Owns a television set (Dummy Variable, Comp.=No)
Fprad1=Heard about family planning on radio(Dmmy.Var. Comp=No)
Fptv1=Heard about family planning on t.v.(Dmmy Var. Comp=No)
Accept1=FP acceptable via media (Dummy Var., Comp.=No)

Four similar models also appear for Indonesia with the same variables except for a few variations. Under religion, Relig1., for Indonesia is "Protestant/Christian", Relig.2 is "Catholic", Relig.3 is "Hindu", Relig.4 is "Buddhist", and Relig.5 is "Other". The comparison category for religion is "Muslim" (coded as 0 in the analysis, as all comparison categories are with the use of dummy variables). Additionally, in Indonesia for transportation they have the option of motorcycle or motorboat. Finally, in the informational model, in Indonesia the respondents have the option of stating their acceptance of the family planning message either through the radio or the television, not just a query for media in general.

The first model, the demographic model, mainly controls for the demographic variables in the logistic analysis. Its primary goal is to discover the predictive effect the independent variables have on the dependent variable of contraceptive use. The final

intent of this model is to maintain all the demographic variables so that there will be a baseline model to work from for adding other variables for other models. Education, in this case, has been collapsed into "no education": and "education" in order to examine the effects on contraceptive use. In previous chapters the educational breakdown into primary, secondary, and higher was included for descriptive purposes only. The second model, the fertility model, focuses more on women's fertility desires and their predicted effects on use of contraception. Yet we still include all the core demographic variables. The third model, the structural model, includes factors such as distance to a facility in continuous numbers as well as dummied variables on time to source and difficulty in getting to the source of contraception. Final aspects of this model include socioeconomic indicators of transportation such as ownership of a bicycle, of a motorcycle, or a car. The fourth model, the informational model, includes variables on knowledge about various methods of birth control, access to mass media in the local community and whether the respondents have such access, the venues from which women have heard about family planning, and finally, whether or not these family planning messages are acceptable to the women or not. As with the other models, the core demographic indicators remain constant.

Table 6.1: Model 1: Demographic Model for the Philippines

	B	S.E.	Odds Ratios
Rural	-.2564*	.0494	.7739*
Educdmy	1.4575*	.2582	4.2952*
Relig1	.1922	.1370	1.2120
Relig2	-1.4594*	.1924	.2324*
Relig3	.0638	.0751	1.0659
Age	-.0021	.0037	.9979
Chldbrn	.0370*	.0114	1.0377**
Constant	-1.6933**	.2821	
*p<.05			
**p<.01			

There are no missing cases affecting the analysis in this first model. For Model 1 for the Philippines, the Demographic Model, we begin by noting that rural exhibits a negative effect on contraceptive use (as seen by the "B" coefficient). As seen by the asterisk near the odds ratio of .7739, this finding is significant at the .05 level, meaning that we are 95% certain there is an effect on contraceptive use. The education variable has a strong positive effect that is also significant at the .05 level. While the first and third religious categories are positively associated with use but not significant, we find that religion 2 (Islam) is negatively associated with use and is also significant. Age has a negative effect on use which makes sense since the older a woman gets the less likely she will need to use birth control. However, age is not significant here. Finally, Children ever born has a positive effect on contraceptive use and it is significant. For every child born a woman is almost 4 percent more likely to use contraception than to not use it.

Table 6.2: Model 2: Fertility Model for the Philippines

	B	S.E.	Odds Ratios
Rural	-.2044*	.0639	.8151*
Educdmy	1.3306*	.3303	3.7835*
Relig1	.1033	.1863	1.1088
Relig2	-1.0285*	.2288	.3575*
Relig3	.1860	.0988	1.2044*
Age	-.0115	.0065	1.0116
Chldbrn	-.1040**	.0185	.9012**
Fert1	-.3307**	.1380	.7184**
Fert2	.4597*	.0822	1.5836*
Want1	.3360*	.0744	1.3993**
Want2	.3055**	.0890	1.3572**
Constant	-1.9226**	.3726	
*p<.05 **p<.01			

In this model there are 2,812 missing cases and thus 4,424 cases are included in the analysis. In Model 2, the Fertility Model for the Philippines, rural again has a negative effect on use, and it is significant. Education has a positive effect here and it is significant. Age, as with the last model, has a negative effect on use. Religion maintains the same pattern as the first model. Specifically looking at the newly introduced fertility variables, while Fert1 is negative and significant at the .01 level, Fert2 is positive and significant at the .05 level. This finding accords with what we would expect, that is, if a woman wants no more children, she is more likely to use contraception than a woman who would like another child. Lastly, both Want1 and Want2 are positively associated with use, but the difference is in their significance.

Table 6.3: Model 3: Structural Model for the Philippines

	B	S.E.	Odds Ratios
Rural	-.2930*	.0562	.7460*
Educdmy	.7597*	.2981	2.1377*
Relig1	.1811	.1527	1.2070
Relig2	-1.0263**	.2304	.3583**
Relig3	.0732	.0830	1.0760
Age	-.0056	.0041	.9944
Chldbrn	.0512**	.0130	1.0525**
Distance	.0020	.0024	.9980
NT15_29	.2784**	.0715	1.3211**
NT30_59	.4798**	.0704	1.6158**
NT60_89	1.0624**	.1079	2.8932**
NT90P	1.1660**	.1206	3.2090**
Diff	-.6160**	.1255	.5401**
Bike	.2493**	.0638	1.2831**
Motor	.5849**	.1049	1.7947**
Car	.0108	.1265	1.0108
Constant	-1.2059**	.3260	
*p<.05 **p<.01			

This model originally had 1,185 missing cases (rejected for the final analysis) with 6,051 cases included in the regression analysis. In Table 6.3 representing Model 3: Structural Model for the Philippines, as with the other models, rural is negatively associated with use and it is significant in this case. Distance is positively associated with use in this model but it is not significant. This confirms our previous findings in the crosstabulations in regards to distance. Additionally, time also has positive effect on use. The more time one has to travel to get to a source, the more likely they are to use. All of the dummy variables for time (all Nts) are significant in this model. The variable for

difficult to get to source is negative, and it is significant at the .01 level. In other words, if it is hard to get to the source of family planning, women are not likely going to be using contraception. The Bike and Motor variables are positively associated with use and are significant in this case. However, the variable for car has a small positive effect, but is not significant.

Table 6.4: Model 4: Informational Model for the Philippines

	B	S.E.	Odds Ratios
Rural	-.0688	.0550	.9335
Educdmy	.3913	.3320	1.4789
Relig1	.2929*	.1484	1.3403*
Relig2	-.6246**	.2246	.5355**
Relig3	.0851	.0799	1.0888
Age	-.0084*	.0040	.9916*
Chldbrn	.0679**	.0127	1.0702**
Knmthd1	6.9454*	3.2672	1038.3753*
Knmthd2	6.3224*	3.0966	556.9137*
Knmthd3	5.0531	3.0185	156.5112
Knmdrn	.6922**	.1660	1.9981**
Rdppr	.1507**	.0603	1.1627**
TV	.1765**	.0703	1.1930**
Radio	-.0406	.0872	.9602
HasTV	.1995**	.0667	1.2208**
Fprad	-.0260	.0595	.9744
Fptv	.0824	.0694	1.0859
Accept	1.0895**	.1421	2.9727**
Constant	-7.6396**	3.0297	

*p<.05
**p<.01

This model had 577 rejected cases due to missing data with 6,659 cases included in the final analysis. In Table 6.4: Model 4: the Informational Model for the Philippines, we are looking at informational access issues and how they affect use of contraception for women. The knowledge of method variables are all positively associated with use but only the first two, knowledge of folkloric (meth1) and traditional (meth2), are significant in this case. The comparison variable is that of "Knows no method", which explains the large numbers in the odds ratios in the right hand column for these three variables. If a woman knows a source where to get a modern method, this has a positive effect on use and is also significant in this model. Of the three media formats discussed above, both the paper and television are positively associated with use and significant but radio is negatively associated with use and not significant. If the women in the survey population find these family planning media messages acceptable, this has a positive effect on contraceptive use and it is significant here.

Table 6.5: Model 1: Demographic Model for Indonesia

	B	S.E.	Odds Ratios
Rural	-.3383**	.0289	.7130**
Educdmy	.6681**	.0368	1.9505**
Relig1	.4470*	.2216	1.5636*
Relig2	.4427*	.2251	1.5568*
Relig3	-.1294	.2265	.8787
Relig4	1.2505**	.2297	3.4921**
Relig5	.4381	.2571	1.5498
Age	-.0154**	.0020	.9847**
Chldbrn	.0771**	.0070	1.0802**
Constant	-.4154	.2317	
*p<.05 **p<.01			

Moving now to the country of Indonesia, in model1 there are no missing cases to affect the logistic regression analysis. In Table 6.5, the Demographic Model also exhibits rural residence as having a negative effect on use (as with the rural variable in the Philippines). And in this case it is also significant. Education has a positive effect on use as well as being significant. The majority of the dummied religion variables are positively associated with contraceptive use but only the third one is negative and not significant (Hindu) and the fifth one (other) has a positive effect on use while being significant. Age is, as with the Philippines, negatively associated with use and significant. Finally, Children ever born is both positively associated with the use of contraception and is significant as well. For every child born a person is 8% more likely to use birth control than someone who has not had additional children born.

Table 6.6: Model 2: Fertility Model for Indonesia

	B	S.E.	Odds Ratios
Rural	-.2612**	.0430	.7701**
Educdmy	.4420**	.0566	1.5558**
Relig1	.7874**	.3216	2.1977**
Relig2	.5111	.3264	1.6671
Relig3	.0765	.3275	1.0795
Relig4	1.1990**	.3376	3.3166**
Relig5	.3300	.3762	1.3910
Age	.0156**	.0042	1.0157**
Chldbrn	-.1849**	.0130	.8312**
Fert1	-.1889**	.0715	.8279**
Fert2	.5089**	.0459	1.6635**
Want1	.3133**	.0688	1.3679**
Want2	.3245**	.0742	1.3833**
Constant	-.7292*	.3419	
*p<.05 **p<.01			

In this model there are 12,787 missing cases which when rejected from the analysis allows for 13,433 cases to be included in the regression analysis. Table 6.6, illustrating Model 2, the Fertility Model for Indonesia, shows that all the added fertility variables have a positive effect on contraceptive use and that three out of the four of them are significant at the .01 level. Fert1 (undecided about how many more children are wanted) is the only variable expressing a negative relationship with contraceptive use.

Table 6.7: Model 3: Structural Model for Indonesia

	B	S.E.	Odds Ratios
Rural	-.1077**	.0457	.8979**
Educdmy	.3543**	.0546	1.4252**
Relig1	.3028	.3456	1.3536
Relig2	.4163	.3507	1.5164
Relig3	-.0571	.3537	.9445
Relig4	1.0593**	.3550	2.8844**
Relig5	.5334	.4134	1.7048
Age	-.0169**	.0029	.9832**
Chldbrn	.0378**	.0099	1.0385**
Distance	-.0015	.0011	.9985
NT15_29	-.1268*	.0579	.8809*
NT30_59	-.0838	.0638	.9196
NT60_89	-.0407	.0751	.9601
NT90P	-.0617	.0868	.9402
Diff	-.6288**	.0759	.5332**
Bike	.2999**	.0353	1.3497**
Motor	.2211**	.0446	1.2475**
Car	.0791	.0870	1.0823
Constant	.1700	.3619	

*p<.05
**p<.01

In this third model for Indonesia there are 11,486 cases rejected for the analysis allowing for 14,734 cases to be included. Table 6.7, the Structural Model for Indonesia, shows nearly all the new distance, time, and difficulty variables being negatively associated with use. Distance is negatively effecting use and is significant. While the dummied time variables are all negatively associated, only the first variable measuring time between 15-29 minutes (as compared to the comparison category of 0-14 minutes) shows significance. Additionally, if it is difficult to get to the source of contraception, there is a negative effect on use, and is also significant here. While the transportation variables all show a positive association with contraceptive use, the bike and motorcycle/motorboat variables are significant here but the car variable is not significant.

Table 6.8: Model 4: Informational Model for Indonesia

	B	S.E.	Odds Ratios
Rural	-.0129	.0331	.9872
Educdmy	.2338**	.0411	1.2634**
Relig1	.2389	.2385	1.2698
Relig2	.3864	.2421	1.4717
Relig3	.1270	.2441	1.1354
Relig4	.9973**	.2466	2.7108**
Relig5	.3023	.2735	1.3530
Age	-.0180**	.0021	.9822**
Chldbrn	.0970**	.0076	1.1019**
Knmthd1	9.0416**	1.5481	8446.9839**
Knmthd2	8.5431**	1.5870	5131.2061**
Knmthd3	7.6612**	1.5275	2124.3158**
Knmdrn	.3022**	.0608	1.3528**
Rdppr	.1535**	.0337	1.1659**
TV	.2869**	.0362	1.3323**
Radio	.0277	.0290	1.0281
HasTV	.1481**	.0345	1.1596**
Fprad	.1080**	.0353	1.1141**
Fptv	.1394**	.0348	1.1496**
Accept1	.0781*	.0362	1.0813*
Accept2	.0558	.0402	1.0573
Constant	-8.4209**	1.5463	
*p<.05 **p<.01			

This final model for Indonesia has 114 cases rejected for the regression analysis leaving 26,106 cases. Table 6.8, showing the Informational Model for Indonesia, displays all of the information variables as being positively associated with contraceptive use. As was the case with the Philippines, the Knowledge of method variables show very high numbers in both the coefficient column as well as the odds ratios column due to the comparison category of Knowing no method. Nearly all the variables here are also

significant except for if the respondent listens to the radio every day as well as if the respondent finds the family planning message on television acceptable or not

Many of the variables in these logistic regression analyses mainly confirmed the findings originally discovered within the crosstabulations in the previous chapter. However, in this case, a more detailed analysis allows for the predictability of how much effect, exactly, these independent variables have on the dependent variable of use of contraception. While many of the findings were significant, none came close to the amount of effect knowledge of any method had on use of birth control. In such cases, respondents were hundreds of times more likely to use contraception if they knew any method at all compared to the comparison category of knowing no method. Yet this reflects one of my original hypotheses about informational access and knowledge of contraception. If you know a method, you are much more likely to use than if you don't know of a method. It may seem self-explanatory, but the numeric effects of such knowledge are readily apparent in the models seen here.

CHAPTER 7

SUMMARIES AND CONCLUSIONS

This thesis has been an exploratory effort to further understand how much effect community and demographic factors have on contraceptive use, allowing for the reduction in birthrates in the island nations of Indonesia and the Philippines. Some theorists speculate that use of contraception has been one of the key factors in these reductions (Njogu 1991). My questions regarding the costs and motivations of contraceptive use have been addressed through the statistical analyses of univariate descriptives, bivariate descriptives (in the form of crosstabulations), and multivariate logistic regressions. Within these processes, I now am able to answer the following study objectives that are central to this research endeavor:

(1) What are the differing levels of contraceptive use by women in both Indonesia and the Philippines?

41% of the women in the Philippines currently use contraception while in Indonesia 52.2% of women currently use.

(2) What effect does distance to a facility and ease of access to a facility have on the utilization of contraception in both countries?

In the Philippines distance exhibits a negative effect on contraceptive use (Beta coefficient of -.0015), but is not significant in this study. Ease of access, actually coded as difficulty to a source, is thus negatively associated

with use (Beta coefficient of -.6288), and it is significant at the .01 level. Therefore, if it is difficult to get there, women are less likely to use. In Indonesia, distance also has a negative effect on contraceptive use (Beta coefficient of -.0020), but it is not significant in the model. Difficulty in getting to a source is also negatively associated with use (Beta coefficient of -.6160), and it is also significant at the .01 level.

(3) Do various transportation issues play an important role in the utilization of contraception in both countries? If so, are there different effects in both areas of study?

Yes, transportation issues do play an important role in the use of birth control in these two countries. While nearly 76% of respondents get to their method of choice by land motorized transport in Indonesia, the majority of women who answered the question in the Philippines either took public transportation (13%) or walked (6.3%). However, I had stipulated that due to mobile clinics being available in the Philippines and not so much in Indonesia, the question (for the Philippines) appears to have a nonresponse rate of almost 76%. Additionally, it was discovered that while having a bicycle and a motorcycle (or motorboat, in Indonesia) was significant and positively associated with contraceptive use, while having a car was positively associated with use but was not significant. In the Philippines, the same pattern exists.

(4) What are the effects of informational access on contraceptive use? Variables of interest include education, literacy, acceptance of family planning messages through differing venues, as well as the source of family planning information itself.

Education, as had been predicted, has a positive effect on contraceptive use across the board, and it is significant at the .01 level for both countries.. It was decided not to include literacy in the multivariate logistic regressions due to its being too highly correlated with education. Acceptance of the media message was positively correlated with use in both countries but in the Philippines, it was significant at the .01 level, and in Indonesia, it was significant at the .05 level in one case (having heard a family planning message on the radio) but not in another (having heard it on television). While the sources of family planning information were positively associated with use in Indonesia, radio had a negative effect on use in the Philippines with the others (tv and newspaper) being positively associated with use.

(5) What are the differential effects of various demographic factors on contraceptive use (age, place of residence, religion, children ever born, and education level)?

Age has a negative effect on the use of contraception in both countries, meaning that the older a woman gets, the less likely she is to use birth control. While it is not significant in the Philippines, it is in Indonesia at the .01 level. Place of residence (with rural as the test variable) has a negative association with contraceptive use in both countries and it is significant in

both Indonesia and the Philippines at the .01 level. Religion plays different roles in both of the countries. In the Philippines the only dummy variable category showing significance at the .01 level also has a negative effect on contraceptive use, that of Islam. The comparison category in this instance is Roman Catholic. However, in Indonesia the only dummied religion variable showing a negative association with use, Hinduism, is not significant. Yet the religions showing significance (Protestant/Christian, Catholicism, and Buddhism) have a positive effect on use. Children ever born has a positive effect on the use of birth control in both countries and it is also significant in both countries at the .01 level. Finally, education was addressed in question #4 and it is positively correlated with use and significant at the .01 level in both countries.

I also found it relevant that knowledge of any method was such a strong predictor of use in both countries. Dummy variables were created for "Knowledge of folkloric method", "Knowledge of traditional method", and "Knowledge of modern method". The comparison category was "Knows no method". Therefore, the predictive numbers were quite high, with the odds ratios stating that women were hundreds of times more likely to use a contraceptive method if they knew of a method than if they did not. Interestingly enough, the numbers also show that women are more likely to use contraception if they know of a folkloric method compared to a traditional method (comparing the beta coefficients in both countries), and they are also more likely to use if they know a traditional method over a modern method. This perhaps shows that even a minute amount

of knowledge about contraception and the spacing of births can increase the odds of using birth control exponentially. Additionally, education follows the same pattern with even some education increasing the odds of using contraception nearly twice as much as no education in Indonesia but over four times as much in the Philippines.

In terms of costs of acquiring access to a method, in both Indonesia and the Philippines distance is negatively associated with use, but it is not significant in either one of the countries. This negative relationship of distance with use is reflected in the literature (Shelton et al. 1976). Following this theme of physical access and cost, difficulty in reaching a facility also presents negative associations with use in both countries. However, both are significant to the .01 level, meaning there is 99% chance that there is an effect of difficulty inhibiting use of contraceptives. Perception then, of the costs of acquiring a method, is an important indicator of use in both of these countries and evidence of this is found in the literature as well (Rodriguez 1979).

One of the more interesting finds of this exploratory study revolves around time to a facility and its effects on use. In the country of Indonesia, as travel time increases, the likelihood of using decreases. This is a common finding in the literature (Rodriguez 1979). Also, time is negatively associated with contraceptive use for each time category, but is only significant at the .05 level for the first dummied variable of fifteen to twenty nine minutes (with a comparison category of zero to fourteen minutes). However, in the Philippines, as the travel time to a family planning facility increases, so does the likelihood of use, with all the time categories being positively associated with use and significant at the .01 level. In a search of the literature, this is a new finding which represents a pattern

not seen elsewhere. A plausible explanation could lie in the amount of effort put forth to get a contraceptive method. If one is willing to travel very long periods of time to get birth control, they are very likely to use it due to their investment of time and effort. Additionally, religion could lend an added effect through its moralistic undertones. In the Philippines, the majority of the population are Roman Catholic (approximately 81%). The Roman Catholic religion firmly and unequivocally does not support the use of birth control. In a sense, then, it could be a matter concerning cultural behavioral patterns. If a Roman Catholic woman wants to use contraception, perhaps she would be quite amenable to traveling out of her way to obtain it in order to avoid social stigma from her neighbors, friends, and from the Church itself (if an avid church goer). Being the only Asian country of a Christian majority, this could be a plausible explanation.

Nearly all the informational access variables in both countries are positively associated with contraceptive use except for "listens to the radio" in the Philippines, which is negative. However, while listening to the radio shows a negative effect on use, it is not significant. Reading the newspaper and watching television, however, are positively associated with use and they both are significant to the .01 level. In Indonesia, however, all of the media venues are positively associated with use but the "listens to the radio" variable is also not significant while the newspaper and television are at the .01 level. The acceptability of family planning messages through these media differs between the two countries. While in Indonesia only the family planning message on the radio is significant at the .05 level (as compared to on television, which is not significant), the acceptability of the media message in the Philippines is significant at the .01 level. Yet all three variables

are positively associated with contraceptive use. It seems then that reading the newspaper and watching television have more of a positive effect on contraceptive use than just listening to the radio. Perhaps this makes sense since watching television and reading the newspaper open people to a wider, more modern world perspective and exhibits the material in a visual (with the newspaper) or audiovisual (television) manner, whereas listening to the radio is only an auditory medium.

As originally hypothesized, the physical access variables (namely time to a facility and difficulty reaching a method) were highly significant indicators of use, depending on the country. Distance was negatively associated with use of contraception in both countries but also was not significant in both areas. The fertility variables did not exert a great deal of effect on use. However, the variable "wanted last child" was a stronger indicator of use than the "fertility preference" variable. The informational access variables were not as strongly related with use of contraceptives as was predicted. Yet the variable "Knowledge of a method" was one of the strongest predictors of use out of the four models (in comparison to "knows no method"). Finally, the demographic variables and their effects on contraceptive use reflected many of the patterns found in the literature, especially with the variables of education, religion, age, and children ever born.

Policy Implications

It appears that for the use of contraception to increase in these two countries it will involve much more than a minor adjustment in family planning program development. In the Philippines, for example, there are religious norms to contend with which seem to

restrict contraceptive use. Additionally, people who travel longer periods of time in the same country are more likely to use contraception than those who do not. However, distance does not exhibit such a pattern. There are mobile units in the country but some women either walk or take public transportation to get to a method. Perhaps infrastructure development is needed to ameliorate the travel pressures? Indonesia, on the other hand, even while being a more rural and presumably isolated country (due to its ruralness) than the Philippines, has higher contraceptive use rates. Additionally, patterns of use follow "expected" ideals such as the inverse relationship seen with distance and use in Indonesia as well as time and use.

It is my contention that in Indonesia there needs to be further development of mobile family planning clinics in order to further disseminate the services and materials needed. I claim that demand could predict supply in this type of environment. While some of the literature has postulated this, no definitive research has been done up to this time legitimating it. I feel that the Philippines could benefit from improvements in its transportation infrastructure as well as recognizing that some confounding factors are deeply rooted within the culture but can strongly affect human behaviors. It appears that whether or not Catholics are in Indonesia or the Philippines, they do not use contraception to any great extent. Muslims perhaps do not utilize birth control methods to prevent having children in a general sense but possibly to further space their births (in both countries).

Including additional economic and structural indicators could benefit the Demographic Health Surveys by further illustrating the manners in which women integrate

their reproductive selves into their community at large. This thesis has been an attempt to do this, in small part, because of the availability of community service data and its ability to be merged with the individual women's data files. Only then can we truly understand how their reproductive lives coalesce into more general community reproductive health behaviors. Such a move could perhaps guide policy towards improved service delivery and implementation of programs not where there already is a high saturation point but where the need is most great.

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