

Contraceptive Availability and Use in Five Developing Countries

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The twentieth century has been a time of unprecedented changes in global population dynamics, particularly in the less developed countries (LDCs). After several decades of declining death rates earlier in this century, in the late 1960s we began to see evidence of a significant downturn in fertility in a growing number of these LDCs.¹ The continuation and spread of these declines in fertility in the 1970s has been well documented, thanks chiefly to results that have emerged from the World Fertility Survey and the Committee on Population and Demography of the National Academy of Sciences.² Most observers are now cautiously optimistic that these trends will continue into the next century,³ but the accuracy of previous long-term projections should cause us to feel less than sanguine about such predictions.

Understanding the determinants of recent fertility trends in LDCs has perhaps been even more difficult than discerning the trends themselves. Recent work by Bongaarts has been especially useful in clarifying the interrelationships between the so-called "proximate determinants" and fertility,⁴ but achievement of similar clarity in our understanding of how socioeconomic factors affect fertility has been elusive. Conventional wisdom 25 years ago held that the demographic transition in nineteenth century Europe was triggered by economic and social development, and that such development was a necessary precondition to the onset of a similar demographic transition in the developing world. However, more recent evi-

dence has shown that fertility has in fact declined in developing countries that are at various stages of development,⁵ that the strength and even direction of relationships between fertility and certain socioeconomic variables is not entirely clear,⁶ and that the European demographic transition may have been tied more to cultural and social factors rather than to changing economic conditions.⁷

There also has been a gradual evolution of thinking concerning the impact of organized family planning programs on fertility. Some early writers discounted the possibility of any significant impact of family planning on fertility on the grounds that in traditional societies women would seek out family planning services only after bearing large numbers of children.⁸ However, later writers found that changes in fertility in LDCs indeed tended to be related to the strength of organized family planning programs.⁹ Other detailed country-specific analyses have suggested similar conclusions.¹⁰

A conclusion one may draw from this recent research is that development and family planning programs both exert a synergistic influence on fertility. Demand for children is affected by socioeconomic development through its influence on tastes, socioeconomic status, women's education, modernity, and the like; it is also influenced by cultural and social norms that act somewhat independently of economic development factors.

Family planning programs serve to provide the means by which fertility desires may be realized. As noted earlier, experience has shown that widespread availability of safe and effective means of contraception can lead to an acceleration in the rate of family planning adoption and subsequent fertility decline. Thus, contraceptive availability is viewed here as a dynamic variable rather than a contextual constant; one

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- 1 The production of material goods and human reproduction must be adapted to each other. Thus, population quantity and quality must be coordinated with the production of capital and consumer goods.
- 2 In a socialist society, production of material goods is planned; population growth must also be planned. Public ownership of the means of production in the socialist system has created the objective condition for a planned adjustment of human reproduction.
- 3 The population problem has been an extremely important issue in socioeconomic development because it can either accelerate or hinder the development process. In China's present condition, control of population growth will facilitate her socioeconomic development.
- 4 We must follow the principle that state guidance should be in agreement with individual willingness. Through popular education and publicity, the masses will realize the importance of population control and conscientiously practice family planning.

that interacts with other social, cultural, and economic factors affecting propensity to use family planning.

Recent Research on Contraceptive Availability

Those involved in family planning program administration have long had an interest in measuring the effect of increased family planning availability on contraceptive use and fertility. However, early attempts to establish such a relationship depended primarily on aggregate indications of level of program activity, contraceptive use, and fertility change.¹¹ While these studies have been instructive, individual-level data are required to properly address the issue of the relative influence of socioeconomic and family planning availability variables on contraceptive use.

Recent efforts to gather survey data on contraceptive availability began in 1977 when the World Fertility Survey (WFS) pilot tested a battery of availability questions in three developing countries: India, Turkey, and Panama.¹² Based on the results of this pilot test, a short "availability grid" was added to the WFS core questionnaire, including knowledge of service outlet, perceived travel time to outlet, and method cost for each of four modern methods: pill, IUD, condom, and female sterilization.¹³ These questions have been included in many (but not all) of the WFS surveys undertaken since 1977. In addition, more than a dozen countries have utilized the WFS Community Level Variables module, which includes some items on actual availability of family planning (but not by method).

Another major source of recent data on perceived availability has been the Contraceptive Prevalence Studies (CPS) program undertaken by Westinghouse Health Systems. Their general approach has followed that of the WFS, but additional questions have been added on mode of transportation, perceived convenience of outlet, general opinion of outlet service, and use of specified outlet.¹⁴ This information has now been collected for approximately 20 developing countries.

The two dimensions of availability most commonly utilized in the literature are knowledge of a family planning outlet and perceived travel time to that outlet. Early analyses of WFS availability data found that knowledge of outlet is in fact positively related to levels of contraceptive use.¹⁵ However, some analysts have correctly pointed out that the direction of causality in this relationship is unclear.¹⁶ Does knowledge of an outlet lead to a greater propensity to use family planning, or is it that those motivated to use family planning seek out information and services to a greater extent than other nonusers?

Turning now to the accessibility measure, one can probably assume that individuals' motivation *per se* does not systematically affect actual accessibility to the same extent that it may affect knowledge of an outlet. Nevertheless, some of the geography literature has suggested that those motivated to use a particular product or service may underestimate the distance or travel time to obtain that product or service.¹⁷ However, in the case of perceived accessibility of family planning, at least two studies have compared perceived travel time with data on actual travel time obtained through a community-level questionnaire and have found reasonably close agreement.¹⁸ Therefore, until evidence is presented to the contrary, we feel fairly confident that WFS and CPS survey data on perceived travel time represent an objective and fairly reliable measure of actual accessibility. Use of perceived travel time may also be argued on the grounds that an individual's perception of accessibility is perhaps a more salient determinant of motivation to use than actual accessibility.¹⁹ In any case, studies that have concentrated on the use of community-level availability data have found results that are fully consistent with studies using only perceived availability data, that is, accessibility of family planning seems to have a positive effect on contraceptive use even after other key sociodemographic variables have been controlled.²⁰

Other recent studies have emphasized the need to incorporate a range of attitudinal data into analyses of availability and contraceptive use. As Hermalin and Entwisle put it, "perceived availability is not a simple function of actual availability but rather a complex product of couples' need for contraception, their attitudes, and the 'density' of community use and discussion as well."²¹ Recent research by Chidambaram and Mastropalo utilizing WFS data for seven developing countries tends to confirm this.²² They found that women who want no more children are most likely to know of a family planning outlet, particularly in the rural areas. Certainly, desire for additional children is an important component of demand for contraception that should be examined in conjunction with availability (or supply) in understanding differentials in actual use.

Another issue that has come out of the recent research on availability is the differential importance of perceived accessibility as a determinant of use in high versus low availability areas. For example, Rodriguez found that perceived accessibility had its weakest effect in countries where availability was uniformly high (e.g., South Korea, Colombia, and Malaysia).²³ Other recent studies have found similar results.²⁴ This is perhaps not a startling finding, since one would not expect a significant covariation between two variables when one of the variables approaches a constant.

Nevertheless, it does highlight the potential usefulness of comparing the strength of the relationship between accessibility and use in a range of availability settings (e.g., high, medium, low availability countries, and/or urban versus rural settings within countries). If one has access to community-level data, an alternative used by Tsui et al. is the construction of a "dummy" variable representing outlet density, defined as the number of family planning outlets within X kilometers or X minutes of a sample cluster. In their analysis of WFS data from Korea, Bangladesh, and Mexico, Tsui and her colleagues found that in "high density" (i.e., high density of family planning outlets) areas, the probability of contraception was 71, 54, and 83 percent higher, respectively, than in "low density" areas, net of the effects of community development, education, marital duration, and parity.²⁵

Our purpose in this paper is to extend some of these innovative approaches in availability research to an analysis of recent CPS data from Costa Rica, Thailand, Colombia, Honduras, and Nepal. Our selection of these countries is an attempt to examine this issue of the relative strength of the accessibility/use relationship in high (Costa Rica and Thailand), medium (Colombia and Honduras), and low (Nepal) availability settings. Our hypothesis is that our measure of perceived availability will have a relatively stronger relationship with use in the countries with medium or low family planning availability.

Data, Conceptual Approach, and Methodology

All study variables are derived from Contraceptive Prevalence Surveys carried out in the five countries. These surveys are briefly described in Table 1. Age at interview has been grouped into five-year categories. Educational level was determined by first asking respondents if they ever attended school, and then (if appropriate) requesting the number of school years they had completed. Desire for more children was measured by the response to: "Do you want to have more children in the future?" The proportions of "Don't know" responses varied widely by country; where there were few such replies, they were collapsed into the "No" category.

The number of children living at time of interview was obtained from the response to the question on the total number of living children or calculated by subtracting the number of children who had died from the total number of live births. To determine work status, all respondents were asked if they had jobs "for

TABLE 1 Contraceptive prevalence survey descriptions

Country survey	Sample size	Sample population ^a	Year of fieldwork
Costa Rica II	4,580	All women	1981
Thailand II	7,038	Ever-married women	1981
Colombia II	3,462	All women	1980
Honduras I	3,597	All women	1981
Nepal I	5,880	Currently married women	1981

^a Women 15-49 years of age.

which they receive payment in cash or kind." Women who gave affirmative replies were classified as employed.

Time to source in all cases was collected in minutes—from 0 (for home delivery) to 600-900 (10-15 hours)—and regrouped into five or six categories for this analysis. All respondents to each survey, except Costa Rica II, were asked the travel time to a source, if known, for each family planning method of which they had knowledge.²⁶ These time-to-source estimates were generated by respondents with a broad range of exposure to family planning programs: from those who were confident enough to estimate travel time to a source that they had never seen,²⁷ to those who had visited the source in the past (for either family planning or other services) or were currently using the location to supply their contraceptive method. Traditionally, authors have alerted readers to the distinction between respondents who possess indirect knowledge of the method source and those who have visited the location. Unfortunately, this bias cannot easily be controlled or eliminated within the context of a short (and purposefully simple) survey questionnaire. Most analytical models, therefore, that seek to isolate the effects, if any, of the accessibility to family planning methods upon the probability of use must compare the perceptions and behaviors of users and nonusers, thereby introducing into the analysis the potential biases of nonusers who are not familiar with the contraceptive sources that they identify.

All women who reported that they were currently using, or had used in the past month, one of ten family planning methods were defined as current users.²⁸ The CPS question eliciting respondents' method preferences is new and has been formulated differently in each survey. In Colombia II all users and nonusers with method knowledge were asked their method of preference. In Honduras I only users and those nonusers who expressed an intention to use family planning in the future were queried. The Costa Rica II and Thailand II questionnaires were designed so that all nonusers and users who first responded

that they would prefer to use another method were asked which method they preferred.²⁹ This question was not asked in Nepal.

Conceptual Approach

The basic availability measures currently employed in the CPS are intended to test the simple availability model diagrammed in Figure 1. Other factors being equal, increasing distance (measured by travel time and travel mode) to a source will reduce the probability of family planning adoption and continued use.

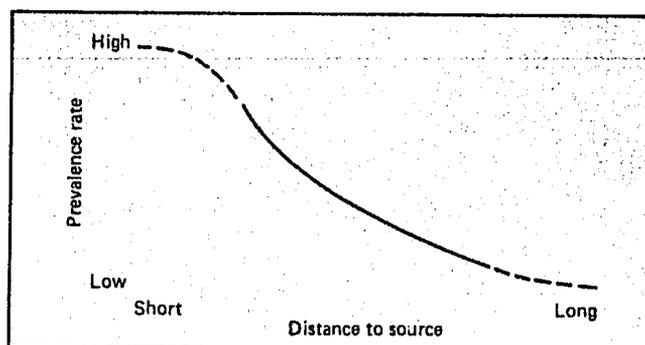
This approach will control for extraneous variables that may confound any association between accessibility to a method source and method use. We will compare the proportions of women who use/don't use family planning methods as accessibility to method sources decreases (i.e., travel time to source increases). We will examine this relationship while controlling for several sociodemographic variables that are known to influence family planning use (age, education, number of living children, and desire for more children). We hypothesize that the proportion of users will decrease as travel time to family planning source increases, other sociodemographic variables, of course, being equal.

"Potential" users of family planning services Not all nonusers are "potential" adopters of family planning services. At any given point in time, many women are not in immediate "need" of family planning services because they are unmarried, desire a child immediately, or are pregnant. Even after "need" is established, a significant number of respondents, thus classified, may not possess the intention (now or in the future) to adopt a family planning method. We must, therefore, first separate the "potential" users of family planning services from the remaining nonusers if we are to measure accurately the link between availability and use.

The study group, therefore, will be composed of women currently in union from 15-44 years of age. Currently pregnant women will not be included in the analysis. This group, obviously, has no reason to adopt family planning until some time after the birth of their next child. Their inclusion in the study would only mask the relationship, if any, between nonusers in more immediate "need" of family planning and the relative accessibility of their contraceptive sources.

Even nonusers, however, with immediate "need" for family planning services (at least to the extent that this "need" can be estimated from the responses to several simple questions on a CPS questionnaire) must also have the desire (intention) to use family planning. This is a rather important variable that the CPS has only recently begun to measure. (Only the Hon-

FIGURE 1 The expected relationship between prevalence and distance to source



duras CPS included this question among the five data sets presented here.) Almost one-half of all the rural nonusers in Honduras (47 percent), for example, did not intend, at the time of interview, to ever use family planning. Such women are currently not "potential" users of family planning services and are not included in the analysis.

Influence of accessibility to source by method type The potential influence that accessibility to source has upon the probability of contraceptive use also depends upon method type. Obviously, accessibility cannot directly influence the decision to use traditional methods (except as a substitute for modern methods that may not be conveniently available). It is also intuitively logical that "potential" users of clinic methods that require only one visit for permanent adoption (voluntary female sterilization) or very infrequent visits for insertion and then periodic checkups (IUD) might regard method accessibility as less of a constraint upon use than women who choose methods that require periodic resupply (pill, condom, injectables).

The existence of any large differential in travel time to source (the most important measure of accessibility in this study) between the former (clinic methods) and the latter (supply methods) can be identified by analyzing the behavior patterns of current users across the five countries.

Method range The range of a family planning method is the distance (measured here in travel time to source) that current users are willing to travel to obtain that method. Overall estimates of travel ranges for each method can be derived from the summary statistics of aggregate individual travel times as reported by current users (see Table 2).

In all five countries, in both urban and rural zones, the mean and median travel times to source reported by current users are lower for supply methods (pill, condom, injectables) than for clinic methods (volun-

TABLE 2 Mean and median travel time to source (in minutes) for current users of contraception, by method and urban/rural residence

Method	Costa Rica			Thailand			Colombia			Honduras			Nepal		
	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N
	Urban														
Pill	19.8	15.1	289	15.5	10.0	202	13.4	10.0	410	22.0	15.1	171	*	*	12 ^a
Condom	19.5	15.0	115	12.2	5.5	55	22.7	10.6	24	*	*	5	*	*	5
Injectables	24.3	16.1	22	21.1	10.4	45	16.2	9.7	25	*	*	6	*	*	2
Voluntary female sterilization	u	u	u	37.1	24.5	281	40.0	29.7	195	50.8	25.0	99	27.2	15.1	27
IUD	38.3	20.5	100	29.6	19.8	29	35.2	28.6	172	45.8	28.0	52	*	*	2
Vasectomy	u	u	u	52.1	29.8	42	*	*	3	*	*	2	28.1	14.4	24
	Rural														
Pill	47.9	30.1	286	22.2	15.1	1,015	63.8	30.8	96	46.8	29.6	92	132.1	59.7	48 ^a
Condom	39.5	29.8	89	20.9	14.6	59	*	*	4	*	*	1	*	*	19
Injectables	48.6	32.5	28	30.	29.5	378	*	*	12	*	*	5	*	*	3
Voluntary female sterilization	u	u	u	70.5	59.3	889	114.1	61.4	74	155.2	118.9	74	165.2	121.8	98
IUD	67.8	30.4	55	67.9	44.8	226	82.8	60.2	34	*	*	14	*	*	1
Vasectomy	u	u	u	77.7	59.7	201	*	*	2	*	*	2	185.3	60.0	118

u = unavailable. * Means and medians not calculated for fewer than 20 cases. ^a Unweighted.

tary female sterilization, IUD, and vasectomy).³⁰ Users, on the average, do travel farther for clinic methods.

There is very little difference among countries in travel time to source for users in urban areas. It appears that family planning methods are readily accessible to urban users in all five countries—the median travel time by method never exceeds 30 minutes.

The rural travel time differentials between countries are much more striking. All methods are easily available to users in Costa Rica and Thailand—with median travel times to supply methods 30 minutes or less and those to clinic methods under one hour. Rural pill users in Colombia and Honduras are relatively close to their sources of supply, but clinic methods are much less available to current users of these methods in both countries. In rural Nepal current users on the average must travel the farthest to obtain their method. The large differentials in rural travel times, however, appear to be associated with the level of family planning program development in each rural area—from the advanced distribution systems of Thailand and Costa Rica to the just emerging network in Nepal.

Time to preferred source A second issue of prime importance in the construction of any model designed to test the relationship between method accessibility and use is the selection of the most valid index of accessibility for present nonusers. (Current users, of course, report the time to their current source of supply.) A convenient and logical surrogate measure is time to preferred source. This source is termed *preferred* since the CPS asks: "Where would you go to obtain this method" rather than "Where is the closest

source for this method." We assume, at least in the case of supply methods, that "preferred" and "closest" sources are synonymous, or that the "preferred" source is not much farther from the respondent's residence than the nearest source. This assumption is valid for Costa Rican women (the only country with both preferred and nearest source data).

In urban areas very few current users of clinical methods used the family planning source closest to their home. The clinic network, of course, is much less dense, especially in urban environments, than the combination clinic/retail network that distributes supply methods. The majority of voluntary female sterilization and IUD users were required, therefore, to travel slightly farther, while the great majority of supply method users could utilize a source nearer to their residence.

The same general pattern holds for rural users. Family planning sources are, of course, fewer in number and more widely dispersed in rural areas. Again, users of clinic methods travel farther to their source than those who use supply methods.

It appears, then, that two distinct travel behaviors exist among current family planning users. Users of supply methods are more apt to frequent the family planning source closer to their residence while clinic method users must usually travel farther to reach their source. The basic point to be made here is that the method range for the majority of clinic users is very high; many current users are willing to travel long distances to their source of supply. Apparently, accessibility to source is not as serious a constraint on use as

it is for supply methods—at least for women who are within one to two hours of their preferred source.

Supply method users versus "potential" users of family planning The approach to be used in this paper is to compare the availability of contraceptive methods between two subgroups: current supply users and "potential" family planning users. Supply methods will be analyzed because we feel that their adoption may be more sensitive to increases in travel time to source (because the source must be visited frequently), and because we believe that the time to preferred source for "potential" users is a reasonable estimate of their actual time to a supply source.

Availability of preferred method Another potentially important influence upon a woman's decision to use family planning is the availability of her preferred method. Probably no woman has an interest in adopting each of the family planning methods she knows. Many, instead, prefer one or two methods to the others. It is important, therefore, to identify the method(s) that each survey respondent would actually consider using and to analyze the relationship between its perceived availability and prevalence of use. In a recent study in the Dominican Republic, almost all first-time adopters in government clinics expressed a specific method preference (see Table 3).³¹ Several recent Contraceptive Prevalence Surveys have also measured method preference among both users and nonusers of family planning. These results indicate that most survey respondents have a definite method preference.

Most women, in fact, may also be able to name specific family planning methods that they would not use. Over 60 percent of the respondents in the Dominican study named at least one such method (see Table 4).

Method preference—both pro and con—therefore, may exert a strong influence on actual family planning behavior. Among women who are in "need" of and possess the "intention" to use family planning, the relative availability of their preferred method(s) (or at least the existence of a method they are not opposed to using) may be a critical determinant of use.

To explore this relationship we separated two additional subgroups of respondents: those who had knowledge of and would prefer to use either the pill or voluntary female sterilization. These groups were chosen both because they were of sufficient size for analysis and because the influence of accessibility to source upon the behavior of women who preferred a clinic method could be compared with that of women who preferred a supply method.³² Data on preferred method are available only for Thailand, Colombia, and Honduras.

The smaller sample sizes also required us to ignore our definition of those in "need" of family planning. All women, regardless of their reason for nonuse,

TABLE 3 Method preference of first-time family planning adopters, by family planning status at four months, Dominican Republic, 1978 (percentage distribution)

Preferred method	Continuer ^a	Discontinuer ^b	Total
No preference	1.1	0.0	0.8
Pill	68.1	80.0	71.2
Condom	8.2	8.2	8.2
Vaginals	5.0	8.2	5.8
Injectables	0.6	0.0	0.4
IUD	17.0	3.3	13.6
Total	100.0	100.0	100.0
Number	182	61	243

^a First-time adopters of family planning who were still using a method at the four-month follow-up interview.

^b First-time adopters of family planning who had discontinued use of any family planning method before the four-month follow-up interview.

SOURCE: Novak, cited in note 31.

TABLE 4 Percentage of first-time family planning adopters who would not use a particular method, by family planning status at four months, Dominican Republic, 1978

Category	Continuers ^a	Discontinuers ^b	Total
Would reject a particular method	57.9	67.7	60.4
Would reject no method	42.1	32.3	39.6
Total	100.0	100.0	100.0
Number	186	62	248
Methods rejected ^c			
IUD	59.3 (64)	73.8 (31)	63.3 (95)
Pill	23.1 (25)	14.3 (6)	20.7 (31)
Condom	17.6 (19)	26.2 (11)	20.0 (30)
Vaginals	25.0 (27)	31.0 (13)	26.7 (40)
Number	108	42	150

^a First-time adopters of family planning who were still using a method at the four-month follow-up interview.

^b First-time adopters of family planning who had discontinued use of any family planning method before the four-month follow-up interview.

^c Do not sum to 100 percent because of multiple responses. Figures in parentheses indicate numbers of responses.

SOURCE: Novak, cited in note 31.

were assigned to two groups: those using and those not using their preferred method.³³ The few women currently using a method other than the one they preferred were included in the latter group.

Methodology

Multiple classification analysis is used to compare the availability of contraceptive methods among the above

selected groups of users and nonusers to determine if prevalence levels are higher among individuals who can more easily obtain contraceptives. The effects of other sociodemographic variables upon contraceptive use are controlled.

While analyses of statistical significance are not possible when the dependent variable in the multiple classification analysis is dichotomous (as it is here), the adjusted category estimates remain unbiased.³⁴ The intent here is to compare, in relative terms, the differentials in contraceptive use as accessibility to source decreases.

Results

We begin with a presentation of overall levels of method awareness, source awareness, and current use in the five countries studied (see Figure 2A). In Costa Rica and Thailand, it is evident that method and source knowledge is nearly universal: 99.0 percent of married women 15–44 years old in these two countries know at least one method and source of supply. Not surprisingly, these countries also have a very high rate of current use of contraception: 66.0 percent in Costa Rica and 59.1 percent in Thailand. Clearly, these are two countries where there has been high penetration of family planning program services. In Thailand, for example, the government launched its National Family Planning Program in 1970. In the decade that followed, levels of contraceptive knowledge among rural married women doubled, and contraceptive use quadrupled.³⁵ During this same time period, fertility declined by more than one-third. While the program was not the only cause of these rapid changes in fertility and family planning behavior, it clearly was a major contributing factor.³⁶

Method and Source Awareness/Use

Contraceptive and outlet awareness/use in Colombia is not far behind that of Costa Rica and Thailand. In Colombia, nearly 97 percent of the married women know at least one family planning method, and 92.5 percent know both a method and a source of supply. More than half (51.0 percent) of all married women in Colombia are currently using a family planning method. As in Costa Rica and Thailand, Colombia has had a significant drop in fertility in the last decade, and a substantial share of the drop in marital fertility has been credited to the strong family planning program efforts in Colombia, led by PROFAMILIA.³⁷

Honduras is a country where, in contrast to the other three LDCs that we have discussed, fertility changed very little during the 1960s and 1970s. In fact, between 1950 and 1974 there was essentially no de-

FIGURE 2 Levels of family planning knowledge and use among women in union, 15–44 years of age, by country and urban/rural residence

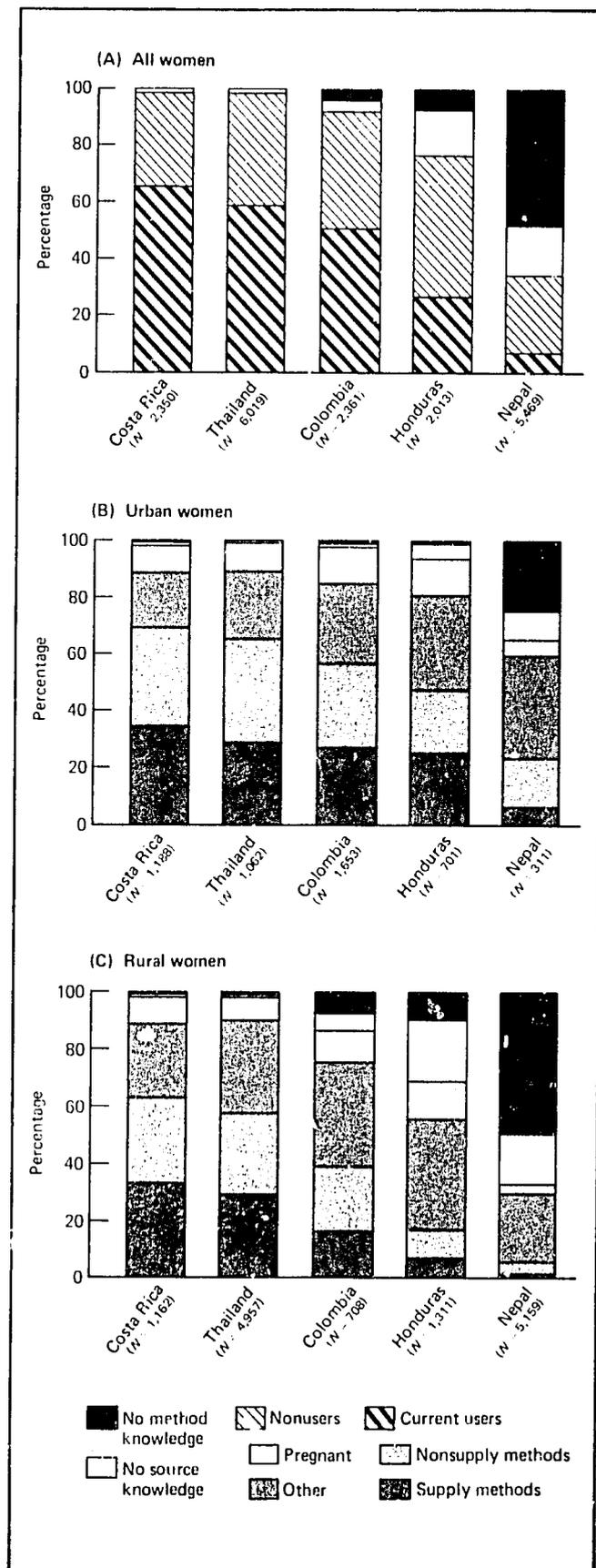


TABLE 5 Percentage of currently married women 15–44 who know of a family planning services outlet, by urban/rural residence and selected sociodemographic indicators: Costa Rica, Thailand, Colombia, Honduras, and Nepal

Indicators	Costa Rica (1980)			Thailand (1981)			Colombia (1980)			Honduras (1981)			Nepal (1981)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Total	99.0	98.1	98.6	99.9	98.8	99.0	94.6	85.0	91.9	93.1	68.4	77.0	64.6	32.8	34.7
Number	1,188	1,162	2,350	1,062	4,957	6,019	1,646	708	2,354	701	1,311	2,013	311	5,159	5,469
Age															
15–19	95.8	96.1	96.0	100.0	99.6	99.6	87.1	73.3	84.2	79.9	57.3	64.0	50.0	29.6	30.5
20–24	100.0	97.6	98.8	99.4	99.6	99.5	95.6	87.8	92.9	93.4	70.2	78.5	63.2	32.6	34.3
25–29	99.6	99.2	99.4	100.0	99.1	99.3	98.1	88.7	95.4	98.4	74.7	83.7	63.9	34.8	36.7
30–34	99.2	99.5	99.3	100.0	99.0	99.1	96.2	85.0	93.0	95.1	69.7	79.1	71.2	35.3	37.4
35–39	99.5	98.0	98.7	100.0	98.8	99.0	94.4	83.5	91.0	95.8	70.4	77.5	69.6	31.5	33.8
40–44	96.9	96.3	96.6	100.0	97.0	97.5	91.7	83.2	89.1	87.3	60.8	70.6	63.7	30.1	32.0
Education															
None	100.0	97.9	98.4	100.0	92.3	93.5	83.0	75.0	78.8	81.8	55.1	59.0	54.4	31.0	31.9
Pri. incom.	98.5	96.1	96.8	99.8	99.3	99.4	91.5	85.2	88.0	90.7	66.3	71.5	76.2	60.0	61.9
Pri. comp.	98.1	98.8	98.5	100.0	100.0	100.0	95.0	91.2	94.2	92.6	86.8	89.4	79.3	67.4	69.8
Sec. incom.	100.0	98.8	99.7	100.0	100.0	100.0	98.3	93.9	97.8	99.2	100.0*	99.3	94.7	55.6	72.3
Sec. comp./univ.	99.5	100.0	99.6	100.0	100.0	100.0	98.3	100.0*	98.4	98.7	100.0*	98.9	92.6	81.3	88.6
Living children															
0	97.1	93.5	95.5	100.0	98.9	99.2	100.0*	75.0*	94.1*	77.1	52.8	62.9	54.8	25.9	27.1
1	99.6	99.6	99.6	99.6	99.3	99.4	94.4	86.2	92.6	91.5	60.8	76.8	54.1	30.9	32.2
2	99.1	98.5	98.8	100.0	99.6	99.7	96.0	86.6	93.7	96.9	66.4	78.9	65.5	32.6	34.4
3	98.2	98.8	98.4	100.0	98.6	98.9	98.1	85.1	94.6	95.5	70.3	79.7	70.4	35.8	38.4
4	100.0	98.3	99.2	100.0	97.8	98.1	97.4	88.2	94.2	98.2	71.5	82.0	68.5	38.5	40.5
5	100.0	97.1	98.1	100.0	98.4	98.6	95.7	81.8	90.6	92.6	75.0	78.8	70.6	36.3	38.4
6+	98.8	97.7	98.0	100.0	97.7	97.9	89.0	86.0	87.5	91.8	70.6	74.6	78.0	38.4	40.6
Desire more children															
Yes	u	u	u	99.7	98.6	98.8	94.4	83.9	91.7	92.1	68.7	77.3	56.8	31.4	32.6
No	u	u	u	100.0	98.9	99.1	95.2	88.0	93.1	68.9	64.7	76.4	73.9	37.6	40.3
Don't know	u	u	u	100.0	96.4	97.0	93.4	71.3	83.0	80.1	47.4	54.4	50.0	23.6	24.5
Work status															
Working	99.5	98.3	99.1	100.0	98.7	98.8	95.8	84.1	94.0	95.6	75.3	87.0	60.1	34.1	35.1
Not working	98.7	98.0	98.3	99.8	98.7	99.2	94.6	85.7	91.5	91.7	67.3	74.1	67.2	31.3	34.2

* Fewer than 30 cases. u = unavailable.

cline in fertility.³⁸ CPS data for Honduras indicate that more than 93 percent of married women know at least one method, yet only 77.0 percent know of a family planning outlet. Honduras's contraceptive use rate of 27.2 percent is less than half that of Thailand. This is not surprising given the lower level of socioeconomic development and family planning program activity in Honduras.

Nepal is a fascinating and challenging country from a development standpoint. It is a relatively poor, traditional society. Much of its topography is rugged and mountainous, making travel and communications exceedingly difficult. The vast majority of women in Nepal are uneducated and illiterate. Under these conditions it is little wonder that knowledge and use of family planning is very low. Nearly half (48.0 percent) of the married women have never heard of any method of family planning, and an additional 17.4 percent do not know of any service outlet. Of the remaining 34.6 percent, only one in five (6.8 percent) is currently using contraception. It is clear from these

data that despite the presence of a population policy in Nepal since the late 1960s,³⁹ availability of services is not yet very widespread.

Sociodemographic and Urban/Rural Differences

We turn next to a more detailed examination of sociodemographic differences in source knowledge in the urban and rural areas of our five study countries (see Table 5). In the two "high availability" countries (Costa Rica and Thailand), we find little evidence of any significant differences in source knowledge according to age, education, number of living children, desire for more children, or work status. In the urban and rural areas of both countries, source knowledge levels vary between a narrow range of 96–100 percent in all subgroups of the population.

In the remaining three countries, the urban/rural differences in source knowledge are more significant, as are the differences between the various sociode-

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mographic subgroups. Urban/rural differences are greatest in Nepal, where urban women are twice as likely as rural women to know a family planning source (64.6 versus 32.8 percent). A significant urban/rural difference also exists in Honduras, where data show that 93.1 percent of urban women know at least one source, compared with 68.4 percent among rural women. Urban/rural differences in source knowledge are smaller in Colombia, more closely resembling the pattern in Costa Rica and Thailand: 94.6 percent of urban women know a source, compared with 85.0 percent of rural women. In general, then, urban/rural differences in source knowledge appear to be most pronounced in countries where family planning service delivery is least developed, probably reflecting a common tendency for services to be concentrated initially in urban areas before eventually diffusing into rural areas.

As expected, we find that women in the "middle" age groups (i.e., 20-34 years old) in Colombia, Honduras, and Nepal are more likely to know a source of family planning, compared with women in the youngest and oldest age groups. Source knowledge is lowest among women 15-19, probably because these women are less likely to be motivated to space or limit childbearing.

Education appears to have a positive monotonic relationship with source knowledge. Among women in Colombia, Honduras, and Nepal with no education, 78.8, 59.0, and 31.9 percent, respectively, know at least one source of family planning services, compared with 98.4, 98.9, and 88.6 percent among women with secondary or higher education.

In Colombia, we do not find any systematic relationship between number of living children and source knowledge, but in Honduras and Nepal, higher parity women do in fact tend to have greater source knowledge. Among women with four living children in Honduras and Nepal, for example, 82.0 and 40.5 per-

cent know a family planning source, compared with 62.9 and 27.1 percent, respectively, among nulliparous women. The relationship between desired family size and source knowledge is also not entirely consistent across countries. In Colombia and Nepal, the data indicate a weak relationship in the expected direction: women wanting no more children are slightly more likely to know a source of supply than women who desire more children. However, in Honduras there appears to be a weak relationship in the opposite direction. Interestingly enough, the lowest level of source knowledge in all three countries is among women who are unsure of their fertility desires, perhaps indicating a general sense of ambivalence or powerlessness among these women concerning their childbearing.

Work status appears to be related to source knowledge only in Honduras, where 87.0 percent of working women know of a family planning outlet, compared with only 74.1 percent among women who do not work. In Colombia and Nepal, there is no consistent relationship between work status and source knowledge, although among urban women in Nepal, it is interesting that only 60.1 percent of working women report knowledge of a source, compared with 67.2 percent among nonworking women.

Time to Preferred Outlet

Next we turn our attention to Table 6, which presents the distribution of responses on time to preferred outlet for those who reported knowing an outlet. Among the countries included in this analysis, Costa Rica and Thailand again stand out as having uniformly high outlet accessibility in both the urban and rural areas. Although there are significant urban/rural differences in the proportion of women within 15 minutes of an outlet in both of these countries, the proportions within 30 minutes are more similar. In Costa Rica, 94.0 per-

TABLE 6 Percentage distribution of currently married women 15-44 who know of a family planning services outlet, by urban/rural residence and perceived travel time to the outlet: Costa Rica, Thailand, Colombia, Honduras, and Nepal

Time (min.)	Costa Rica (1980)			Thailand (1981)			Colombia (1980)			Honduras (1981)			Nepal (1981)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1-15	69.8	38.4	54.3	85.4 ^a	59.7 ^a	64.3 ^a	79.0	20.3	62.7	70.0	21.3	41.2	62.9	12.2	17.7
16-30	24.2	34.5	29.3	12.6	30.1	27.0	15.8	21.8	17.4	23.3	18.2	20.3	23.1	9.7	11.1
31-45	2.4	5.7	4.0	0.5	1.4	1.2	1.4	8.4	3.3	1.6	4.1	3.1	2.3	1.6	1.7
46-60	2.9	11.9	7.3	0.9	5.3	4.5	2.6	17.5	6.7	2.8	14.8	9.9	6.2	14.6	14.7
61+	0.8	9.5	5.1	0.7	5.4	2.9	1.4	31.9	9.8	2.4	41.6	25.6	5.5	61.9	54.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,180	1,147	2,327	1,059	4,889	5,946	1,555	595	2,150	552	802	1,354	195	1,611	1,806

^a Includes 7.2, 2.1, and 3.0 percent, respectively, who knew about household delivery of contraceptives.

cent of the urban women and 72.9 percent of the rural women live within 30 minutes of an outlet. In Thailand, the corresponding percentages are 98.0 percent and 89.8 percent, including a significant number of women who know about (and may be using) household delivery of contraceptives.

In the remaining three countries, the urban/rural differences in perceived accessibility are considerably more significant. In Colombia, for example, nearly 95 percent of urban women reported being within 30 minutes of an outlet, compared with only 42.1 percent in the rural areas. In fact, almost 32 percent of these rural women reported living more than one hour away from their preferred outlet. In Honduras we find a similar pattern: more than 93 percent of urban women live within 30 minutes of an outlet, compared with less than 40 percent of the rural women; and more than 41 percent of the women in rural areas report being more than an hour from their preferred outlet. In Nepal the differences are even more significant. Eighty-six percent of urban women are within 30 minutes of an outlet, compared with only 21.9 percent among rural women. Nearly 62 percent of rural women in Nepal live more than one hour from their preferred outlet.

Accessibility and Use

We have seen from the foregoing analysis that for countries with moderate or low levels of family planning availability (e.g., Colombia, Honduras, and Nepal), there are important urban/rural differences in source knowledge and perceived travel time to the preferred outlet. There are several possible reasons for this. For one, family planning programs in developing countries typically begin first in the urban areas where the health services delivery infrastructure is better developed. Diffusion of services into the rural areas usually occurs very gradually as new outlets are created and staffed. Transportation and communications in the rural areas also are less developed compared with urban areas, making outreach a far more difficult task. Under these circumstances, it is little wonder that for countries in the early or middle stages of family planning program development, we find large urban/rural differences in source knowledge and perceived travel time. This variability also points out the need to look at urban and rural areas separately when examining the relationship between accessibility and current use.

In the multiple classification analysis that follows, our aim is to compare the relative impact of travel time on use and nonuse of contraceptives among specific subgroups of the population. Figure 2 (B and C) presents a breakdown of the study population into these subgroups for the urban and rural areas in each of the five countries.

Users/Nonusers Versus Supply Users/Potential Users

We will first analyze, on a country-by-country basis, the relative influence of accessibility upon prevalence rates for two subgroups: all users/nonusers (who know a source) and supply users/"potential" users. Accessibility may be more of a constraint upon use in the latter group, which contains only nonusers "in need" of contraception (see Table 7).

Urban areas In the urban areas, contraceptive prevalence rates among women in union 15-44 years old range from a high of 70 percent (Costa Rica) to 36 percent in Nepal. In each country, family planning methods are readily available to urban residents; most women live within 15 minutes of their preferred family planning outlet (or for users, their current source). While all countries, except Honduras, show slight drops in use rates with increasing time to source, the difference in prevalence rates between women who live within 15 minutes of their source and the few who live farther away are minimal.

When present users of supply methods are compared with nonusers "in need" of family planning, however, the differentials in use between women closest to and farther from their preferred source increases. In Costa Rica, Thailand, and Colombia, prevalence levels decline among women who live farther than 15 minutes from their preferred family planning source. There is a slight increase in prevalence among Honduran women who are more distant from their preferred source; there is no change with increasing time to source in urban Nepal.

Rural areas In rural areas, larger proportions of women must travel over 30 minutes to their preferred family planning outlet (or current source of supply). The extreme is Nepal where two-thirds of all women live 61 minutes or more from an outlet. Time to source is more clearly associated with contraceptive use than it is in urban areas. Use in each country, except Thailand, eventually declines with increasing time to source (see Table 8). In Costa Rica a slight drop in contraceptive use occurs among those who must travel over one hour.

Prevalence levels in Colombia and Honduras are more sensitive to increasing time to source. The break-point for Colombian women is 30 minutes or more; the largest decrease in Honduras occurs between those within 15 minutes and those farther away (in both countries prevalence rates remain relatively constant thereafter).

Time to source in Nepal must be measured on an entirely different scale. Here use declines among women one to four hours from their preferred source, then rises for those four to eight hours removed, and falls again among women who are more distant. This

TABLE 7 Multiple classification analysis of family planning use by travel time to source, controlling for age, educational level, desire for more children, and number of living children, urban women

Travel time to source (min.)	All users/nonusers		Supply users/ potential users			
	N	Adjusted mean	Beta	N	Adjusted mean	Beta
Costa Rica						
1-15	824	.72		445	.67	
16-30						
31-45	285	.65 ^a		193	.56 ^a	
46-60						
61+						
			.06			.11
Total number	1,109			638		
Grand mean		.70			.64	
Thailand						
1-15	827	.64		425	.53	
16-30						
31-45	154	.59 ^a		77	.41 ^a	
46-60						
61+						
			.04			.08
Total number	981			502		
Grand mean		.63			.51	
Colombia						
1-15	1,052	.64		647	.57	
16-30						
31-45	282	.59 ^a		161	.43 ^a	
46-60						
61+						
			.04			.11
Total number	1,334			808		
Grand mean		.63			.51	
Honduras						
1-15	425	.46		282	.41	
16-30	164	.58				
31-45						
46-60	64	.53 ^b		128	.47 ^a	
61+						
			.11			.05
Total number	653			410		
Grand mean		.50			.43	
Nepal						
1-15	122	.37		78	.15	
16-30						
31-45	72	.34 ^a		50	.15 ^a	
46-60						
61+						
			.03			.06
Total number	194			128		
Grand mean		.36			.15	

^a 16-61+ minutes. ^b 31-61+ minutes.

fluctuation is not easily explained, but in countries with low levels of knowledge and use, such as Nepal, only the most committed women initially adopt family planning—many by traveling relatively long distances.

TABLE 8 Multiple classification analysis of family planning use by travel time to source, controlling for age, educational level, desire for more children, and number of living children, rural women

Travel time to source (min.)	All users/nonusers		Supply users/ potential users			
	N	Adjusted mean	Beta	N	Adjusted mean	Beta
Costa Rica						
1-15	441	.66		263	.59	
16-30	396	.62		227	.55	
31-45	65	.60		42	.52	
46-60	136	.69		94	.64	
61+	109	.50		68	.36	
			.10			.15
Total number	1,147			694		
Grand mean		.63			.56	
Thailand						
1-15	2,813	.59		1,804	.48	
16-30	1,474	.57		952	.45	
31-45	68	.59		43	.45	
46-60	259	.55		163	.44	
61+	168	.65		78	.44	
			.03			.03
Total number	4,782			3,046		
Grand mean		.58			.47	
Colombia						
1-15	105	.57		70	.47	
16-30	122	.50		76	.37	
31-45	45	.41		26	.29	
46-60	93	.41		60	.26	
61+	165	.37		114	.23	
			.15			.19
Total number	530			346		
Grand mean		.45			.32	
Honduras						
1-15	180	.31		127	.33	
16-30	163	.23		105	.18	
31-45	36	.24		30	.19	
46-60	134	.26		83	.19	
61-120	173	.17		122	.08	
121+	209	.24		134	.04	
			.10			.28
Total number	895			601		
Grand mean		.24			.16	
Nepal						
0-60 min.	613	.23		434	.09	
1-4 hours	778	.14		616	.01	
4-8 hours	165	.20		126	.12	
1 day	54	.14		39	.03	
			.11			.20
Total number	1,574			1,215		
Grand mean		.18			.05	

When only supply users and nonusers "in need" (potential users) are compared, however, the relative importance of the accessibility variable increases considerably. In Costa Rica the largest decline in use is

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among the few women who live over an hour from their preferred source. In Thailand travel time appears to be no constraint on use; prevalence rates remain almost constant regardless of accessibility.

In Colombia and Honduras, however, time to source is a very important determinant of contraceptive use. Use is highest among those within 15 minutes, decreases slightly for those between 16 minutes and one hour from an outlet, then declines at an increasing rate for those farthest away. Twenty-two percent of the rural Honduran population live over two hours from a source; their prevalence rate is only one-eighth the level of those who have family planning methods available within 15 minutes of their residence.

Availability and Use among Those Who Intend to Use

Only in Honduras can the study group be further refined by intention to use family planning (see Table 9). Fifty-seven percent (the grand mean) of these women in urban areas are currently using contraception—a rate almost as high as the national prevalence rate for Costa Rica (66 percent; see Figure 2A). Among urban women who intend to use contraception, time to source has no influence on prevalence rates. It should be noted, however, that almost all women live within 30 minutes of a family planning outlet.

Accessibility in rural areas, however, is a major constraint on use among potential users. Almost one-half of those within 15 minutes of a source are currently using contraception, but this figure declines very rapidly with increasing time to source. Only 5 percent of those who must travel over two hours are current users.

Preferred Method Users/Nonusers

The pill Over one-half of all urban women in Thailand, Colombia, and Honduras who prefer the pill are using it (see Table 10; data on preferred method are available only for these three countries). In urban areas, the accessibility variable, time to source, has no effect upon use in Thailand and Honduras; there is a decrease in use associated with increasing time to source among Colombian women, however. In both Thailand and Colombia, over three-quarters of the urban women live within 15 minutes of a source of oral contraceptives. This figure drops to 59 percent among Honduran women, but another 35 percent live between 16 and 30 minutes from a source (94 percent live within a half hour of a source). Since over 90 percent of all urban women have ready access (a travel time of a half hour or less) to a pill source, method availability, therefore, is not a constraint upon use.

TABLE 9 Multiple classification analysis of family planning use by travel time to source for supply users and nonusers who intend to use in the future, controlling for age, educational level, desire for more children, and number of living children, Honduras

Travel time to source (min.)	Urban women			Rural women		
	N	Adjusted mean	Beta	N	Adjusted mean	Beta
1-15	207	.57		90	.46	
16-30				68	.28	
31-45				21	.29	
46-60	99	.58 ^a		54	.27	
61-120				60	.17	
121+				75	.05	
			.01			.33
Total number	307			369		
Grand mean		.57			.26	

^a 16-121+ minutes.

TABLE 10 Multiple classification analysis of pill use by travel time to source among women who prefer the pill, controlling for age, educational level, desire for more children, and number of living children

Travel time to source (min.)	Urban women			Rural women		
	N	Adjusted mean	Beta	N	Adjusted mean	Beta
Thailand						
1-15	194	.52		775	.53	
16-30				477	.55	
31-45						
46-60	57	.53 ^a		150	.56 ^b	
61+						
			.01			.02
Total number	251			1,402		
Grand mean		.52			.54	
Colombia						
1-15	367	.58		29	.63	
16-30				28	.59	
31-45				13	.33	
46-60	103	.44 ^a		25	.46	
61+				49	.33	
			.11			.26
Total number	470			154		
Grand mean		.55			.47	
Honduras						
1-15	111	.52		61	.41	
16-30				37	.39	
31-45				11	.58	
46-60	77	.58 ^a		23	.21	
61+				56	.09	
			.06			.32
Total number	187			188		
Grand mean		.54			.29	

^a 16-61+ minutes. ^b 31-61+ minutes.

In the rural areas of Thailand, 89 percent of all women who prefer the pill are within a half hour of a source. Pill use remains constant, even among women who live farther away. The rural patterns in both Colombia and Honduras, however, are strikingly different; fewer women are within 30 minutes of a pill source (44 percent and 52 percent, respectively). In both cases, the proportion of users decreases with increasing time to source; only one-half as many Colombian women who must travel more than one hour to a pill source are currently using when compared to the group closest to a source (1-15 minutes away). In Honduras, travel time appears to be even more of a constraint upon use; only one-quarter as many of the group farthest removed from a source are using contraception, compared with the groups closest to a source. In both countries, the accessibility variable, time to source, is most strongly associated with the use/nonuse of the pill.

Voluntary female sterilization—As is intuitively obvious, the number of living children, the desire for children, and the age of the respondent all influence the decision to adopt voluntary female sterilization (see Table 11). In this analysis, only women who prefer voluntary female sterilization and want no more children are included. Obviously, women desiring additional children might prefer sterilization but only as a method to adopt at some point in the future.

As expected, many women are apparently willing to travel longer distances to be sterilized; prevalence rates in Thailand and Colombia do not decline by much with increasing time to source. In these countries, urban women who prefer sterilization are apparently willing to travel over one hour to adopt. Only in Honduras does the proportion of those sterilized decrease as time to source increases.

In rural areas, the relationship between time to source and use of sterilization exhibits one pattern in Thailand and another in both Colombia and Honduras. A very high percentage of Thai women who prefer sterilization have been sterilized (76 percent). The proportion of use increases among those groups who must travel farther to adopt—even among women who are more than two hours from a sterilization source. At such great distances, probably only the women most committed to the method name female sterilization as their preference. Many of them have already been sterilized.

In both Colombia and Honduras, however, women within 30 or 45 minutes of a sterilization source have adopted at higher rates than those farther away. Accessibility to a sterilization source appears to have some influence on the decision to adopt sterilization in these countries.

TABLE 11 Multiple classification analysis of use of voluntary female sterilization by travel time to source among women who prefer sterilization and want no more children, controlling for age, educational level, desire for more children, and number of living children

Travel time to source (min.)	Urban women			Rural women		
	N	Adjusted mean	Beta	N	Adjusted mean	Beta
Thailand						
1-15	144	.70		167	.77	
16-30	136	.74		326	.73	
31-45	15	.75		38	.73	
46-60	33	.83		227	.70	
61-120	43	.64 ^d		245	.81	
121+				93	.88	
			.10			.12
Total number	371			1,096		
Grand mean		.72			.76	
Colombia						
1-15	64	.47				
16-30	69	.41		25	.54 ^b	
31-45	26	.76				
46-60	23	.40		23	.33 ^c	
61+	29	.46		47	.34	
			.08			.18
Total number	211			95		
Grand mean		.43			.39	
Honduras						
1-15	37	.72				
16-30	54	.49		24	.62 ^d	
31-45						
46-60	21	.48 ^c		24	.33	
61-120				40	.42	
121+	34	.38 ^a		76	.37	
			.25			.18
Total number	146			164		
Grand mean		.52			.41	

^a 61-121+ minutes. ^b 1-30 minutes. ^c 31-60 minutes.

^d 1-45 minutes.

Conclusions

Accessibility appears to be a constraint on the use of supply methods in instances where travel time exceeds one hour. The range (distance or time individuals are willing to travel to obtain a method) for supply methods is, therefore, relatively short. In areas where large numbers of eligible women live beyond the "acceptable" range, significant drops in prevalence are observed as time to source increases. This situation exists primarily in the rural zones in countries where the service delivery system still cannot provide maxi-

mum coverage. In urban areas, where almost everyone lives within one-half hour of a supply source, method accessibility has little effect on method use.

The relationship between method availability and use was clarified, somewhat, by refining the subgroups of eligible women that were entered into the analysis. The comparison of women "in need" of family planning (potential users) with those currently using supply methods indicates that method availability can have a greater influence upon the prevalence levels of these subgroups than previous analysis had indicated. Among rural Honduran women who intend to use family planning, the inaccessibility of method sources is the most important obstacle to use.

Women who knew and preferred either the pill or voluntary female sterilization were also identified for a separate analysis. Women who prefer sterilization are apparently willing to travel a somewhat greater distance to adopt but, again, especially in rural areas, prevalence rates declined with increasing time to source (except in Thailand).

Current users of family planning appear to exhibit two distinct travel ranges based upon method type—users of clinic methods generally traveling farther to their source than supply method users. This difference should be controlled in future availability analysis. Clinic methods are less sensitive to distance-decay effects. Only in extreme cases, where travel time to the clinic exceeds several hours, will accessibility constrain use.

Future Research Trends

Refinement of accessibility measures Rodriguez has determined that perceived travel time to source closely corresponds to actual distance to source.⁴⁰ For this reason, travel time should continue to be used as an easily collected and quantified surrogate for distance to source.

In the future, however, travel time should be controlled by mode of transportation (walk/ride). These data are collected by the CPS but were not analyzed here. There is some evidence to suggest that riders (they also live farther away from sources of contraception, which confounds the issue) tend to have more positive attitudes toward family planning and a slightly higher rate of method continuation once they have adopted.⁴¹

Lack of accessibility as a reason for nonuse The inaccessibility of family planning methods is very rarely mentioned as a reason for nonuse in contraceptive prevalence surveys. There exists, however, a very definite distance-decay in contraceptive prevalence rates among women who live farther from family planning

sources. Most individuals may not consciously be aware that accessibility influences their decision to adopt or not adopt family planning; more "concrete" and immediate responses for nonuse (such as breastfeeding, health problems or fears) may be the first to be elicited and recorded during the interview.

Respondent behavior, on the other hand, indicates that prevalence levels drop as time to source increases. A more detailed analysis of behavior—the proportion of users among all women "in need" of family planning at increasing distances (travel time) from source—would provide program administrators with an "optimal" distance estimate (method range) that could assist in the placement of method outlets within the target population.

Introduction of "intention to use" indices in family planning surveys Many survey respondents do not intend to use family planning regardless of how accessible it might be. Once family planning method and source knowledge reach almost universal levels within a population (over 80–90 percent), the two remaining constraints to use are each individual's intention to use and the availability of family planning services. The relative influences of these two constraints upon use within the eligible population should be more accurately measured in future surveys. Each problem requires a distinct program response: the former, a more effective IEC campaign, the latter, an improvement in method distribution.

Identification of methods preferred and not preferred As illustrated in the previous analysis, the availability of family planning methods preferred by most eligible women may be a much more important influence on prevalence levels than the general distribution of all methods. Future availability research should emphasize the relationship between the accessibility to—and use of—preferred methods. Methods that would not be adopted by the majority of eligible women should of course be de-emphasized in any such analysis. Their availability would not have any great influence on prevalence levels.

Attitudinal biases and contraceptive availability One problem with the availability data collected by the CPS is its subjective nature—all estimates of travel effort are collected from the respondents. Recent research indicates that these personal measures of travel difficulty may be influenced by independent attitudinal biases that are colored by each individual's past travel experience and present attitude toward family planning.

Respondent familiarity with the source of family planning methods may influence estimates of overall travel effort. Rodriguez notes that a slightly larger number of respondents familiar with the source will

offer estimates on the distance between their residence and the source.⁴² He did not, however, compare the relative accuracy of these estimates with the reports from those who were not familiar with the source.

Novak found that while both family planning continuers and discontinuers gave equal estimates of the time required to cover the same distance, discontinuers had more of a tendency to classify these trips as "far" (on the ordinal scale: close-intermediate-far).⁴³ The less committed may accurately perceive the travel time to clinic but consider the trip more of a "bother" than a more motivated individual.

The attitudinal biases that may influence perceived availability should be more adequately measured and analyzed. Future research efforts should be directed toward better indexes of respondent familiarity with source, reason for source/method preferences, motivation to use contraception, and utilization (and attractiveness) of multiple purpose sources.

References and Notes

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- 26 In Costa Rica, all women who knew a source were asked the travel time to the nearest source. Current users were also asked the time to their method source.
- 27 The tendency of some CPS respondents to assume that contraceptive methods are available at specific locations is, at present, an unresolved problem. In the Honduras pretest, for example, several respondents named the local public hospital as a source for voluntary female sterilization—a logical but erroneous assumption.
- 28 The methods were: pill, IUD, voluntary female sterilization, condom, vasectomy, injectables, vaginals, rhythm, withdrawal, and "other." Use of "other" methods is reported by less than 1 percent of all survey respondents.
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