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ANALYSIS OF FAMILY SIZE AND DECOMPOSITION OF CONTRACEPTIVE PREVALENCE RATES IN BOACO, NICARAGUA

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ANALYSIS OF FAMILY SIZE AND DECOMPOSITION OF
CONTRACEPTIVE PREVALENCE RATES
IN BOACO, NICARAGUA

Introduction

Since November 1976, the Ministry of Public Health of Nicaragua has conducted a program for the low-cost distribution of contraceptives and selected health supplies in rural areas, using indigenous midwives or parteras. To evaluate the partera project, a benchmark survey was conducted with the assistance of the Family Planning Evaluation Division during the summer of 1977. Fertility and contraceptive status obtained from the survey will be used to measure the impact of the project. The analysis of the differentials in family size and contraceptive prevalence for the survey presented here may have significant implications for the evaluation and improvement of the project.

The sampling design included 35 rural segments that were randomly selected out of a total of 474 segments that made up the sampling frame for the rural area of the Department of Boaco. A rural segment is an areal subdivision defined for census purposes. On the average, each sector consisted of 24 households. An eligible woman (married, aged 15-44) from each household in the sampled segments was interviewed; if there were more than one eligible woman in a household, one of them was selected at random as the respondent. Since each individual eligible woman did not have equal probability of being selected in the sample because of unequal number of eligible women in a household, the sampled respondents were weighted by the size of household (the number of eligible women) in order to correct for the different probability of selection. Thus, while 527 respondents were actually observed in this study, the weighted number of cases is 586 (Monteith, 1977; Monteith, et al, 1978).

Determinants of Family Size

Table 1 presents the reported number of pregnancies, live births, and child deaths for the respondents by age groups. Of an average of 5.35 pregnancies per respondent reported, 5.03 pregnancies were ended with live births, and 4.03 of these children were surviving at time of interview. The oldest age group (40-44) had 9.65 pregnancies, 8.69 live births, and 6.86 living children per respondent. The difference between number of pregnancies completed and number of pregnancies ending with a live birth outcome, represents fetal wastage, and the difference between live births and living children is equal to the number of child deaths. Thus, we have calculated that 6.0 percent of total pregnancies were terminated by fetal wastage, which included both spontaneous and induced abortions, and 19.9 percent of children born alive to respondents were not living at the time of the survey.

By age group, both the fetal wastage rate and child mortality rate did not consistently increase with age of respondents. This suggests that there might have been considerable under-reporting of child mortality and possibly fetal wastage by older respondents. Nevertheless, the figures indicate that, to a great extent, family size has been strongly affected by a high child mortality rate.

The high level of child mortality is demonstrated impressively by the proportion of women who had at least one child death, as shown in Table 2. Generally, the rate is negatively related to educational background and positively related to age or number of live births of the respondents, (although the relationship between education and

child mortality is not clear cut at the youngest age group and for women with 1-2 children). A striking finding is that for those respondents who had no education and who were 25 years or older, 60% or more had experienced at least one child death; the rate reached about 70% for those 35-44 years old. Over 50% of those who had no education and had more than 3 or more live births had experienced at least one child death; the rate reaches almost 90% for those who had more than 10 births.

Fetal wastage, which includes both spontaneous and induced abortions, is another factor affecting total family size. As shown in Table 3, the overall proportion of respondents who had reported at least one such abortion (19.1%) is much lower than that for child death (48.8%), but the pattern of the rates by characteristics of respondents are similar. The rate of fetal wastage is positively related to age and number of pregnancies terminated and independent of the education of the respondents. In total, the proportion appears to be negatively related to education of respondents; however, this relationship is not clear cut when controlled for age or number of pregnancies. If fetal wastage primarily represents induced abortions, one might expect to find a higher rate of fetal wastage among higher educated who have demonstrated a somewhat greater tendency to attempt to control their fertility. However, failure of the fetal wastage rate to be consistently higher for respondents with higher education, when age or number of pregnancies are controlled, suggests that the abortions reported might be mostly spontaneous rather than induced.

The foregoing has described the status of pregnancy, fetal wastage, fertility, and child mortality of married women in one department in rural Nicaragua. The extent to which they had experienced fetal wastage and child mortality by characteristics of respondents were also observed. To gain an insight into the differential seen in family size, path analysis was undertaken and the path diagram (Duncan, 1966) is presented in Figure 1.

A path diagram postulates a specific causal model among several variables. In a path diagram, a variable can be affected by all the other variables which are to the left of it in the diagram. The direct or net influences of the variables on one another are represented by straight arrows. The magnitude of these influences is given by the path coefficient in standard forms which are beta coefficients, or standardized regression coefficients obtained from the appropriate multiple regression. The zero order correlation between the independent variables are shown by the curvilinear two-headed arrows. The paths R_p, R_f, R_c, and R_l in the diagram represent the residual paths, which encompass all outside influences on the variable in question, unexplained by variables included in the model.

The right-hand side of the diagram shows the impacts of pregnancies, fetal deaths, and child mortality on family size, i.e., the number of living children. For each respondent, the number of living children is exactly determined by the number of pregnancies terminated and number of fetal deaths as well as number of child deaths, which is expressed as follows:

No. of Living Children	=	No. of Pregnancies Completed	-	No. of Fetal Deaths	-	No. of Child Deaths

The path coefficients appearing in the diagram were obtained from the standardized regression coefficients of the regression equation treating number of living children as the dependent variable and the other three components: number of pregnancies, number of fetal deaths, and number of child deaths as independent variables. The path coefficients indicate the relative importance of the corresponding variable on number of living children, and since the variation of the dependent variable is completely accounted for by the three independent variables, the residual path coefficient is equal to zero. As indicated by path coefficients shown in the path diagram in Figure 1, an increase in one standard deviation (SD) of pregnancies completed resulted in 1.34 SD of living children. This is compared to an increase in one SD of fetal death associated with a decrease in .29 SD of living children and an increase in one SD of child deaths associated with a decrease in .55 SD of living children. Thus, to a great extent, family size has been limited by the number of child deaths and fetal wastage in spite of a large number of pregnancies per woman.

The left-hand side of the path diagram shows how age and education, as well as residence, of respondents influence the numbers of pregnancies, fetal wastages, and child mortality which, in turn, have an effect on the family size. According to the model, as expected, age has a strong positive effect on family size through number of pregnancies terminated and has a considerably negative effect through fetal wastage and child mortality. Education, in contrast, has a negative effect on family size through number of pregnancies completed, but has a positive effect through fetal wastage and child mortality, although the

path coefficient of education on abortion is not statistically significant at the .05 level. Residence in areal sectors adjacent to a peublo has an independent negative influence on family size through number of pregnancies completed. However, the positive effect through fetal wastage and child mortality is not statistically significant. An areal sector to a pueblo is indicative of urban influence which, in fact, appears to have a significant negative impact on family size through number of pregnancies completed. Table 4 shows correlation coefficients, means, and standard deviations for all variables entered in the path analysis.

In the path diagram, all path coefficients are in standard form so that the relative importance of the independent variables are able to be compared. However, the results are more readily interpretable if the absolute relationships between the independent variables and the dependent variables are shown. In other words, the number of living children associated with a given increase in age or educational level or place of residence, through total number of pregnancies, fetal wastage, and child deaths can be computed. To do this, all the path coefficients were transformed to unstandardized regression coefficients. The impacts of age, education, and residence on family size on an unstandardized basis are therefore calculated and shown in Table 5.

An increase in one year of age is, in effect, associated with an increase in .241 living children, which was the net result of the positive effect of .342 living children through number of pregnancies and the negative effects of .027 and .074 living children through fetal

wastage and child deaths, respectively. On the other hand, respondents who had one level of higher education has .298 fewer living children, which resulted in the negative effect of .737 living children through number of pregnancies and .074 and .365 living children through fetal wastage and child deaths, respectively. Independent of the effects of age and education, whether respondents lived in segments adjacent to a pueblo or not, they had an average difference of .519 fewer living children, which was the net result of the negative effect of .853 living children through number of pregnancies and .133 and .201 living children through fetal wastage and child deaths, respectively. The path diagram we have used represents a linear additive non-interactive model. With these assumptions the extent to which the diagram fits the actual data needs to be tested. Therefore, tests of linear relationships and interactive effects between independent and dependent variables are required. The tests were undertaken for the left-hand side of the regression systems of the path diagram as appeared in Figure 1. The right-hand side of the regression system, i.e., the regression of family size with number of pregnancies, fetal wastage, and child deaths needs no such tests because these independent variables are structurally equal to the dependent variable so that the variance of the dependent variable is fully explained by these three independent variables. In other words, the regression model completely fits the actual data set as far as these variables are concerned.

The result of the linearity test, as presented in Table 6, shows that the non-linear relationships between the background variables (age and

education) and their dependent variables (numbers of pregnancies, fetal wastage, and child deaths) are statistically insignificant. Another independent variable, place of residence, was excluded from the test since it has dichotomized categories and there is no problem with regard to its linearity for this variable.

In contrast to the result of the non-linearity test, some interactive effects were detected in the test for interaction. Among others, age and education, as well as age and place of residence, both have significant interactive effects on number of pregnancies; and age and education have also a significant effect on the number of child deaths. The results of significance tests are shown below:

Interaction of:

Age and Education on Number of Pregnancies $F=3.88$ ($\alpha = .002$)
Age and Place of Residence on Number of Pregnancies $F=2.93$ ($\alpha = .013$)
Age and Education on Number of Child Deaths $F=4.60$ ($\alpha < .001$)

Thus, the path model seemed well fit to the actual data in terms of linear relationships between the independent and dependent variables in question. However, to some extent, the model involved errors by precluding the interactive effects existing in some of the variables. Since measurements of such interactive effects are not the main focus of this paper, the analysis of such effects are beyond the scope of this working paper.

Decomposition of Contraceptive Prevalence Rates

The survey revealed that only 8.4% of eligible women were currently practicing effective methods of contraception, as shown in Table 7. Besides current practice of effective methods, data on the number of respondents who had known at least one effective method of contraception and those

who had ever used contraceptive methods were also collected. Table 7 lists those numbers and various rates computed from them. The rate of current practicing (Cu/T), or contraceptive prevalence, and be decomposed into three components:

$$(Cu/T) = (K/T) \times (Eu/K) \times (Cu/Eu)$$

Contraceptive Prevalence (R) = Information Factor (I) x Motivation Fctor (M) x Continuation Factor (C)

Although it is oversimplified, as expressed above, the component K/T can be conveniently referred to as "the rate of being informed" or "information factor;" Eu/K can be called the "rate of motivation" or "motivation Factor;" and Cu/Eu can be named the "rate of continuation" or "continuation factor." Contraceptive prevalence of any group or a subgroup of respondents is mathematically equal to the product of the three components.

Table 8 shows the result of such decompositions for all respondents and the subgroups by age, education, and location of residence. The contraceptive prevalence, or the proportion currently practicing, was higher for the middle-aged than younger and older age groups; was much higher for respondents with higher education, and those who lived near a pueblo, or town had a remarkably higher rate than those in other areas.

Suppose we observe two subgroups of respondents where one group has a higher current practice rate than the other. Their relationship with these three factors can be written:

$$R_H = I_H \times M_H \times C_H$$

$$R_L = I_L \times M_L \times C_L$$

where subscript H denotes the high-rate group and L expresses the low-rate group. Then, the difference in current practice rate between the two groups can be decomposed into the adidtive effects of these three factors:

$$
\begin{aligned}
RH - RL = {} & (I_H - I_L) \times M_L \times C_L \text{.....Information Effect} \\
& + (M_H - M_L) \times I_L \times C_L \text{.....Motivation Effect} \\
& + (C_H - C_L) \times I_L \times M_L \text{.....Continuation Effect} \\
& + \text{(Interaction Effect)}
\end{aligned}
$$

The proof and description of the above mathematical identity are given in the Appendix of this paper.

Applying the figures presented in Table 8 to the above formulas, we obtain the results shown in Table 9 indicating how much of the difference in the rate of the current practice between two groups of respondents is accounted for by the three factors. Among different age groups, the middle-aged group had higher practice rates than the younger and the older groups. As shown in Table 9, the middle-aged group is 3.6% higher than the young group and 2.1% higher thna the old. In both cases, a small amount of the difference is acounted for by the information factor, but a great deal is accounted for by the motivation factor; the continuation factor has a small effect. The positive effect of the continuation factor for middle-aged versus older group supports our previous conjecture that the effect of the continuation factor on the practice rate is associated with demographic pressure felt by the contraceptive users.

Those who have higher education are 4.3% higher in current practice rate than those who have lower education (11.5% versus 7.2% as appeared in Table 8). Of this difference, 1.7% is accounted for by the information factor. This suggests that the group with higher education was better informed or more knowledgeable about effective methods of contraception than the group with the lower education; this makes the former group 1.7% higher in practice rate than the latter group. The motivation factor accounts for 4.4%. We previously defined that the motivation factor is the rate between ever users and those who know the method. Thus, given the same knowledge of the methods, more women with higher education have tried a method than those with lower education. In other words, women with higher education were much more strongly motivated in practice than women with lower education. The continuation factor which is defined as the rate of current use among ever users, on the other hand, accounts for -1.5% in the difference of current practice rate. This indicates that women with higher education who ever tried a method were less consistently practicing than women with lower education. This is presumably because women with higher education may have less demographic pressure (i.e., have fewer children, are younger, or both) than those with lower education.

Whether the respondents lived adjacent to a pueblo or not makes a great difference in the rate of practice. Again, as shown in Table 9, the difference of 6.8% is accounted for by all of the three factors. Those who lived adjacent to a pueblo were better informed, more motivated, and had higher continuation rates than those who lived

in other areas. Results of previous analysis (Table 4) indicated that residence is positively correlated with education of respondents. In other words, women who lived adjacent to a pueblo had higher education than those who lived in other areas. Thus, underlying differences between the types of areas may partly account for the difference in the rate of contraceptive practice. Nevertheless, the positive effect of the continuation factor on the rate of contraceptive use implies that the accessibility to a pueblo means the accessibility not only to information, but also to contraceptive supplies and services which, in turn, has a positive impact on the rate of practice through positive effects of information, motivation, and continuation factors. For the continuation factor, given the characteristics of women residing adjacent to a pueblo, one would expect a negative effect. The positive effect of the continuation factor that is actually observed suggests that location of residence may be a very important factor in determining the prevalence of contraceptive use in this area. This has implications for the partera program, which seeks to increase contraceptive practice independent of location.

Summary and Implications

The levels of both fertility and child mortality in rural Nicaragua are considerably high by modern standards. Based on the survey data, Anderson estimated the crude birth rate of about 50 and the crude death rate of 17 per 1,000 population. (For more details, refer to "Demographic Estimation, Boaco, Nicaragua Contraceptive Survey", by J.E. Anderson, working paper no. 1, Family Planning Evaluation Division, Center for

Disease Control, April, 1978). To a great extent, family size has been regulated by child mortality, as well as fetal wastage. For the oldest age group (40-44 years) of married women, there was an average of about 9.7 pregnancies terminated, 8.7 live births, and 6.9 living children.

Results of path analysis (Figure 1) show that the family size was influenced by the characteristics of respondents, such as age, education, and place of residence. As might be expected, older women have a greater number of pregnancies as well as higher risk of having fetal wastage and child deaths. Contrary to the age effect, both education and place of residence had independent negative impacts on family size through number of pregnancies, but had positive impacts through fetal wastage and child mortality, although the effects of education on fetal wastage and child deaths were not statistically significant.

Corresponding to a high level of fertility, the rate of contraceptive prevalence was very low. Only 8.4% of the total respondents were currently using effective contraceptive methods, primarily the oral pill.

While the overall rate of contraceptive prevalence was quite low for all segments of the population, it did vary by the characteristics of respondents. The middle-aged group had a higher current practice rate than either younger or older groups. The educational and resident differential in the rate of current practice logically confirm our previous finding with respect to negative impacts of education and place of residence on family size through number of pregnancies. Whether the rate was differentiated by age, or education, or place of residence, the so-called "motivational factor", (the proportion currently using of those who know of methods), accounted for the largest part of age, education, and residential differences, as compared to the so-called "information" and

"continuation" factors.

The extent to which the current partera program which provides essential medical and contraceptive supplies and services not previously available in rural areas, will be effective is yet to be evaluated. However, results of the foregoing analysis imply that an intensive motivational campaign, in addition to the partera program seem required in order to facilitate a high rate of contraceptive prevalence.

A follow-up contraceptive prevalence survey in the same area for evaluation of the partera program is planned. The technique of decomposing the current contraceptive practice rate into information, motivation, and continuation components, as demonstrated in this paper, is recommended to be appropriately used in evaluating the performance of the program. In the absence of a control area, the program area can be sub-divided into high, medium, and low density of parteras per 100 households by the census sectors or segments. Then, the difference in rate of current practice before and after the program in the three areas can be observed. Furthermore, the magnitudes of information, motivation, and continuation effects on differences in contraceptive practice in the three areas can be computed. Thus, by comparison of these effects among three sub-areas, we will gain an insight into the mechanism of the partera program which will hopefully bring about further improvement of the program.

APPENDIX

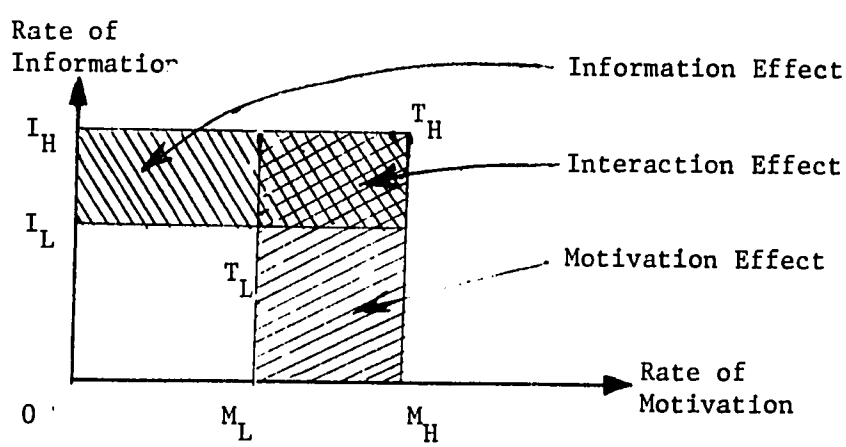
Suppose the rate is decomposed into the product of two factors, information and motivation factors for the two groups:

$$R_H = I_H \times M_H$$

$$R_L = I_L \times M_L$$

Then, $R_H - R_L = \underbrace{(I_H - I_L)M_L}_{\text{Information Effect}} + \underbrace{(M_H - M_L)I_L}_{\text{Motivation Effect}} + \underbrace{(I_H - I_L)(M_H - M_L)}_{\text{Interaction Effect}}$

The above equation can be easily explained by a graphic presentation. As shown in the figure, the vertical axis measures the rate of information, while the horizontal axis measures the rate of motivation.



Suppose the high-rate group has a rate of information OI_H, and a rate of motivation OM_H. Then, the rate of practicing is $OI_H \times OM_H$ which is equivalent to the area $OI_HT_HM_H$. Similarly, for the low-rate group, if

the rate of information is I_L, and the rate of motivation is M_L, then the rate of practicing is $OI_L \times OM_L$, which is expressed in area $OI_L T_L M_L$. Since the difference in practice rate between two groups is the difference between the areas of $OI_H T_H M_H$ and $OI_L T_L M_L$, the sum of the shadowed area in the figure can be ascertained as the difference in practice rate; and the upper left portion of shadowed area would be accounted for as the information effect; the right-lower shadow as the motivation effect; while the upper-right shadow would be counted as the interaction effect. Thus:

Upper-left shadowed area = $(I_H - I_L) \times M_L$ = Information Effect

Lower-right shadowed area = $(M_H - M_L) \times I_L$ = Motivation Effect

Upper-right shadowed area = $(I_H - I_L)(M_H - M_L)$ = Interaction Effect

These expressions confirm exactly the equation stated above.

The same logic can be applied for the product of three factors, as follows:

$$R_H = I_H \times M_H \times C_H$$

$$R_L = I_L \times M_L \times C_L$$

$$\begin{aligned} R_H - R_L = {} & (I_H - I_L) M_L C_L \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Information effect} \\ & + (M_H - M_L) I_L C_L \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Motivation effect} \\ & + (C_H - C_L) I_L M_L \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Continuation effect} \\ & + (I_H - I_L)(M_H - M_L) C_L + (I_H - I_L)(C_H - C_L) M_L + (M_H - M_L)(C_H - C_L) I_L \\ & (I_H - I_L)(M_H - M_L)(C_H - C_L) \ldots\ldots\ldots\ldots\ldots\ldots \text{Interaction effect} \end{aligned}$$

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TABLE 1

Records of Pregnancies, Fertility, and Child Mortality
by Age Group of Respondents

Age Group	Mean Number of: Pregnancies Completed (a)	Live Births (b)	Living Children (c)	Rate of: Fetal Wastage (a-b)/(a)	Child Mortality (b-c)/(b)
15-19 (81)	1.27	1.20	0.96	5.5	20.0
20-24 (116)	2.82	2.69	2.23	5.0	17.1
25-29 (132)	4.80	4.48	3.80	4.8	15.2
30-34 (84)	7.05	6.73	5.45	3.8	19.0
35-39 (93)	7.62	6.91	5.56	9.1	19.5
40-44 (80)	9.65	8.69	6.86	6.2	21.1
TOTAL (586)	5.35	5.03	4.03	6.0	19.9

Note: Figures in parentheses are number of weighted cases rather than actual respondents interviewed. Cases were weighted to correct for different probability of selection.

TABLE 2

Percent of Respondents Who Had at Least
One Child Death by Specific Characteristics

	Education of Respondents: No Schooling	Primary* or Above	Total
Age Groups			
15-24	26.8% (123)	31.1% (74)	28.4%(197)
25-34	59.6 (161)	43.6 (55)	55.6 (216)
35-44	69.9 (136)	40.5 (37)	63.6 (173)
No. of Live Births			
0	-- (19)	-- (11)	-- (30)
1-2	20.2% (84)	25.9% (58)	22.5%(142)
3-5	50.8 (132)	45.5 (55)	49.2 (187)
6-9	70.5 (122)	50.0 (36)	65.8 (158)
10-16	86.7 (63)	50.0 (6)	82.6 (69)
TOTAL	53.3% (420)	37.4% (166)	43.8%(586)

Note: Figures in parentheses are number of weighted cases rather than actual respondents interviewed. These cases were weighted to correct for different probability of selection.

*Of 166 cases, only 14 completed primary school; one has secondary school education; the rest are all dropouts from primary school.

TABLE 3

Percent of Respondents Who Had at Least One Fetal Wastage* by Specific Characteristics

	No Schooling	Primary** or Above	Total
Age Groups			
15-24	*8.9%* (123)	*10.8%* (74)	*9.6%* (187)
25-34	*20.5* (161)	*12.7* (55)	*18.5* (216)
35-44	*33.1* (136)	*21.6* (37)	*30.6* (173)
No. of Pregnancies Terminated			
0	-- (19)	-- (8)	-- (27)
1-3	*3.3%* (121)	*7.2%* (83)	*4.9%* (204)
4-7	*20.6* (146)	*24.5* (53)	*21.6* (199)
8-22	*41.0* (134)	*18.2* (22)	*37.8* (156)
Total	*21.2%* (420)	*13.9%* (166)	*19.1%* (586)

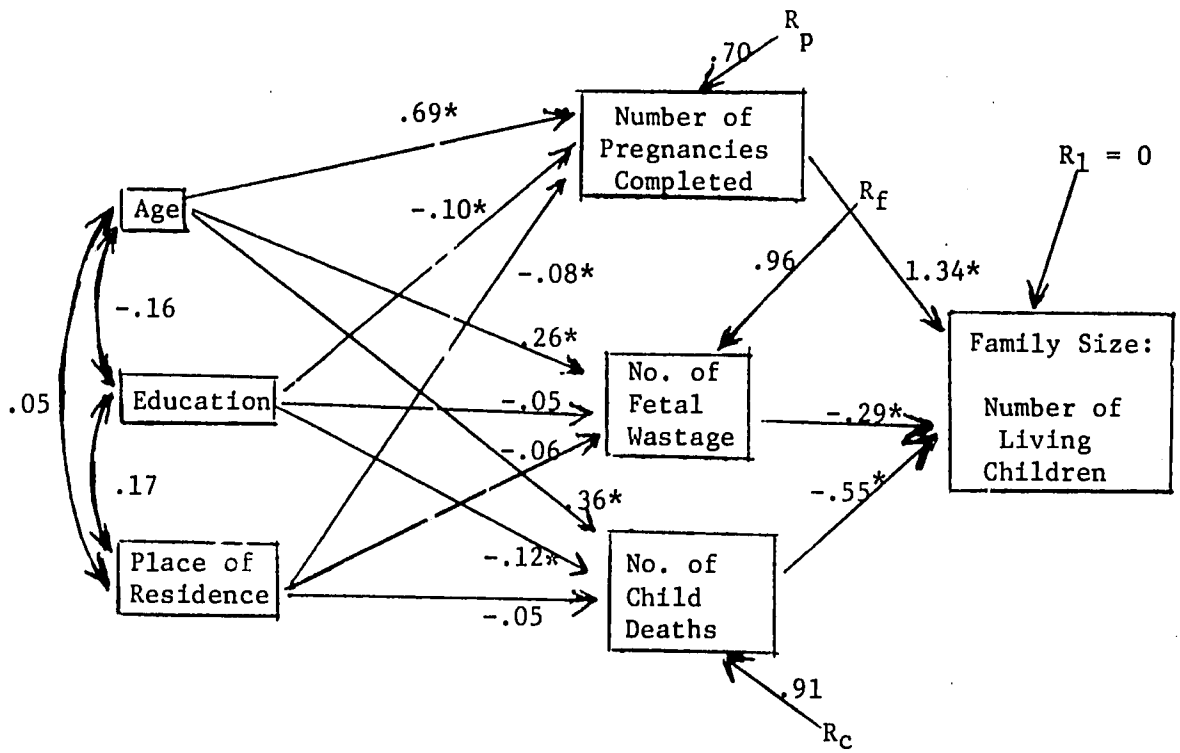
Note: Figures in parentheses are number of weighted cases rather than actual respondents interviewed. These cases were weighted to correct for different probability of selection.

*Included both spontaneous and induced abortions.

**Of 166 cases in this category, only 14 cases completed primary school; one has secondary school education; the rest are all primary dropouts.

Figure 1

Path Diagram Showing Effects of Respondents' Characteristics on Family Size Through Number of Pregnancies, Fetal Wastage, and Child Mortality



Note: Path coefficients with asterisks in the diagram are statistically significant, i.e., the magnitude of coefficient is greater than twice its standard error. The coefficients without asterisks are not statistically significant.

TABLE 4

Correlation Matrix, Means, and Standard Deviations
For Variables Used in the Path Diagram

Variables	Age	Education	Residence*	Pregnancies	Fetal Wastage	Child Mortality	Living Children
Age	--	-.16	.05	.70	.26	.38	.66
Education		--	.17	-.22	-.10	-.19	-.17
Residence*			--	-.06	-.05	-.05	-.04
Pregnancies				--	.40	.61	.89
Fetal Wastage					--	.11	.19
Child Deaths						--	.24
Living Children							--
Mean	28.75	1.31	.17	5.35	0.32	1.00	4.03
Standard Deviation	7.82	0.52	.38	3.88	0.83	1.88	2.90

*See footnote of Table 5.

TABLE 5

Estimations of the Effects of Age, Education, and place of Residence
on Family Size Through Pregnancies, Fetal Wastage, and
Child Deaths in Terms of Raw Scores

Independent Variables	Unit of Scales	Impacts on Living Children Through: Pregnancies Completed	Fetal Wastage	Child Deaths	Total
1. Age	(1 year)	+.342	-.027	-.074	+.241
2. Education	(1 level*)	-.737	+.074	+.365	-.298
3. Residence	(see **)	-.853	+.133	+.201	-.519

*The level of education was quantified as follows:

1: no schooling;
2: primary school level;
3: high school

**The surveyed area was subdivided into segments for census purposes. Those who lived in segments adjacent to a pueblo were coded 1; otherwise they were coded 0.

TABLE 6

F Values Resulted from Tests of Linearity Among Selected Independent and Dependent Variables in the Path Diagram

Independent Variables	Number of Pregnancies	Number of Fetal Wastage	Number of Child Deaths
Age	1.57 (6 and 579)	1.55 (6 and 579)	0.89 (6 and 579)
Education	1.37 (3 and 582)	0.60 (3 and 582)	1.55 (3 and 582)

Note: Figures in parentheses are degree of freedom for each respective F value.

The category for place of residence used in the path analysis was dichotomized and thus there is no problem of linearity. Therefore, test was not given for this variable.

TABLE 7

Methods of Contraceptives Being Practiced at Time of Interview

Methods Being Used	No. of Cases*	Percent
1. Oral Pill	26	4.4
2. Injection	8	1.4
3. IUD	7	1.2
4. Condom	4	0.7
5. Sterilization	4	0.7
Total Using Effective Methods	49	8.4
Not Using Any Methods**	537	91.6
TOTAL CASES	586	100.0

*The number of cases were weighted to correct different probability of selection.

**Included one case using douche and 31 cases prolonged lactation, which are regarded as ineffective methods.

TABLE 8

Contraceptive Prevalence as the Produce of Information, Motivation, and Continuation Factors by Background and Residence of Respondents

Variables	Contraceptive Prevalence (Cu/T) = R		Factors of: Information (K/T) = I		Motivation (Eu/K) = M		Continuation (Cu/Eu) = C
Total Respondents (586)	.084 (49/586)	=	.730 (428/586)	x	.206 (88/428)	x	.557 (49/88)
Age of Respondents							
15-24 (197)	.066	=	.751	x	.076	x	.500
25-34 (216)	.102	=	.750	x	.253	x	.537
35-44 (173)	.081	=	.682	x	.178	x	.667
Education of Respondents							
No Schooling (420)	.072	=	.683	x	.171	x	.612
Primary and Above (166)	.115	=	.849	x	.277	x	.487
Place of Residence*							
Adjacent to Pueblo (100)	.140	=	.820	x	.268	x	.636
Other Areas (486)	.072	=	.712	x	.191	x	.530

Note: Figures in parentheses are numbers of cases observed. These cases were weighted to correct different probability of selection.

*The surveyed area was subdivided into segments for census purposes, thus, the place of residence for all respondents was classified into two categories based on whether the residential segments were geographically adjacent to a pueblo or not.

TABLE 9

Differential Current Practice Rate in Age, Education, and Place of Residence as Accounted for by Information, Motivation, and Continuation Factors

Variables and Categories to be Compared	Differences in Current Practice Rate		Effects of: Inform.		Motiva.		Continu.		Interaction
Age Groups									
Middle versus Young	+3.6%	=	0.0%	+	2.9%	+	0.5%	+	0.2%
Middle versus Old	+2.1%	=	0.8%	+	3.4%	-	1.6%	-	0.5%
Education									
High versus Low	+4.3%	=	1.7%	+	4.4%	-	1.5%	-	0.3%
Place of Residence*									
Adjacent to Pueblo versus Other Areas	+6.8%	=	1.1%	+	2.9%	+	1.4%	+	1.4%

*See footnote of Table 8.