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# Economic Determinants of Fertility and Child Health in Philippine and Indian Rural Households: Technical Report

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# Economic Determinants of Fertility and Child Health in Philippine and Indian Rural Households

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The purpose of this research is to provide estimates of the impact of governmental efforts to reduce population growth and augment child survival and health in India and in the Philippines. Our methodological approach is to integrate program assessment with economic models of household choice. As in more conventional economic models of individual behavior, household models of fertility have stressed the role of prices and income as determinants of the desired number of children and desired child quality. Viewed in the context of this economic framework, government initiatives at limiting fertility and increasing health are attempts to alter the structure of prices faced by the household in making its resource allocation decision.

This approach is both important and useful for several reasons. It explicitly recognizes interdependencies between programs which have been designed for single objectives. For example, the introduction of an effective family planning program reduces the price of averting future births and, thus, would be expected to reduce fertility. However, if the quantity and quality of children are viewed by the household as substitute commodities in consumption, i.e., in satisfying parental desires, child health, as an index of quality, would be expected to rise and child mortality would, thus, fall. If they are complements, on the other hand, child mortality might rise if the real income gain associated with the fall in the price of contraception does not itself increase the demand for child health sufficiently to offset the "complementarity" effect. The point is that programs designed to influence population growth alone will, in general, have effects on child health and mortality in a direction which is not predictable by theory.* In the same manner, programs designed to

* Theory can provide a structure for understanding the different components of a policy effect, but without measures of the quantitative importance of components which may have opposing effects on household behavior, it is not possible to say what these effects will be.

influence mortality will modify the fertility choice as well.

This insight can be used to obtain evidence on the consistency of the empirical results aimed at program assessment. If several alternative programs exist and have independent effects on fertility and mortality, the estimated pattern of effects should be identical. Thus, if two types of health facilities each reduce mortality, their effects on fertility should be in the same direction. An opposite result would not be compatible with theory.

The economic approach further clarifies the need for a multivariate statistical framework. Individual or regional differences in income, wage rates, education or other prices would confound estimates of program effectiveness if they enter the governmental decision-making process regarding the location and institution of programs. Data which include houshold characteristics are, therefore, a crucial component of the analysis of governmental interventions.

The most troublesome issue concerns the general nature of the program allocation process within government. If, for example, family planning clinics are intentionally located in high fertility areas where there is also resistance to contraception because desired fertility exceeds even the biologically feasible maximum, the measured impact of the program on fertility must be positive when it is estimated from a sample containing both high and low fertility families. Even if high fertility families are not at the biological maximum, the measured impact will reflect not only its true (negative) impact but also the positive association due to the placement of the program in high fertility areas. Less obviously perhaps, the measured impact of other programs will also be contaminated, in general,

even if they are located independently of areal fertility levels, as long as there is some correlation in the placement of different programs due to unmeasured (by the researcher) characteristics of the population. Unless the researcher knows the specific allocation formula of the government or, at a minimum, some political determinants of the process that are unrelated to fertility or mortality, it may be impossible to disentangle the allocation process from the program impact. Note that if these programs were allocated consciously to low fertility areas, a negative effect of the program could be estimated even if no effect existed. In general, only if the allocation of government programs is independent of household decisions variables can the estimates presented reflect a unidirectional causal interpretation. Therefore, this research provides an accurate picture of the impact of the Indian and Philippine fertility control and health programs only under the assumption that such programs are not established in a way associated with fertility or mortality levels. More convincing evidence can be accumulated only if governments become more sensitive to evaluation. The most obvious solution is a random allocation scheme in the sense described above.

## I. METHODOLOGY

### A. A Theoretical Framework

It is assumed that prospective parents derive utility from children directly, or indirectly through the surplus produced by children performing market or non-market work during the lifetime of the adults. In addition, parents are assumed to derive satisfaction from the characteristics (quality)

of children, some of which can be influenced by parental allocation decisions. Health is one aspect of child quality, and mortality may be considered an extreme manifestation of the lack of health. Child deaths are assumed to have a psychic cost over and above the fact that, for given number of children, deaths reduce the number of surviving children. The case where surviving children alone enter the utility function , so that deaths themselves have no psychic cost, is clearly contained in this broader framework. Prospective parents also derive satisfaction from the consumption of non-child related commodities. These assumptions may be conveniently characterized by the utility function

$$U = U(N, m, H, Z)$$

where N is the number of live births, m is the proportion of children born who die, Z is a composite of other consumption items and where, for convenience, H, health is the only relevant component of child quality and is measured on a per-child basis.

Health per child, H, consists of two components--that which requires individual (per child) investments $H_1$, such as food, clothing, medicine, and that which is associated with the health environment, $H_2$, i.e., $H = \theta(H_1, H_2)$. $H_2$ is a "public good" in that its price or cost does not significantly increase as family size expands--increasing $H_2$ by one unit augments the health of every child.

The net price of a live birth consists of delivery costs including the opportunity cost of the mother's time devoted to pre-natal care less the contraceptive costs (psychic and monetary) of averting births. Assuming an exogenously given income, i.e., ignoring labor supply decisions, the

budget constraint is given by

$$Y = p_N N + p_1 H_1 + p_2 N H_2 + p_Z Z + p_C (N_{max} - N)$$

where $p_N$ is the (gross) price of numbers of births, $p_1$ is the price (time, goods) of augmenting the health environment, $p_2$ is the price of increasing health associated with each child, $p_Z$ is the price of other consumption goods, and $p_C$ is the price of averting births through contraception with $N_{max} - N$ the number of births averted. $N_{max}$ is the number of births that would occur in the absence of contraception (natural fertility). The net price of a child is, therefore $p_N - p_C$. A decrease in the cost of contraception thus increases the net price of an additional child.

The probability of a child's death is assumed to depend on the level of the child's health H. The greater the average level of health of the children with the family, therefore, the lower will be the mortality rate, i.e., the lower the fraction of deaths for given live births. Thus, in deciding upon the level of health, the family is implicitly influencing the number of surviving children in a probabilistic sense. These relationships are summarized in

$$m = \bar{m} + m(H) + \varepsilon$$

and

$$N_s = N \cdot m$$

where m is the mortality rate, $\bar{m}$ is the expected mortality rate for the family that is independent of H, m(H) is the functional relationship between health and mortality, $\varepsilon$ is a random component, and $N_s$ is the actual number of surviving children. If $\varepsilon$ has zero expected value, the expected

number of surviving children is $E(N_s) = N[\bar{m} + m(H)]$ which is completely determined by N, H and m. The family can be viewed as choosing, therefore, the number of surviving children and the average health of those surviving children.

The goal of the family is to maximize its utility over N, m, H and Z subject to its income constraint.* The model is static in the sense that this decision is made in an initial period under the assumption of constant prices and tastes. Spacing and the life-cycle timing of children are ignored. Changes in prices during the life-cycle may not have identical effects to those derived from this model, although directional implications should be invariant.

The governmental programs which are the focus of this research are closely related to the prices $p_C$, $p_1$ and $p_2$ and to the exogenous component of mortality $\bar{m}$. Family planning programs presumably attempt to reduce $p_C$, the price of contraception. However, the effect of particular health programs may be quite difficult to allocate between $p_1$, $p_2$ and $\bar{m}$. For this reason, the "interactive" price $p_2$ will be set to zero in the ensuing discussion. For policy purposes, this assumption has no significance. A non-zero interactive price yields only an alternative theoretical interpretation of substitution relationships.

The implications of this model for changes in the parameters of interest are summarized below. The appendix provides the mathematical support for the discussion. We will consider, in turn, reductions in $p_C$, $p_1$ and $\bar{m}$. A reduction in contraceptive costs $p_C$ is exactly analogous to an increase in the cost of children $p_N$. Since "own" price effects must be negative, the reduction in $p_C$ leads to a reduction in fertility. However, when the cost of averting births is reduced there is a real income gain. If the relationship

*We assume in what follows that m is known with certainty, i.e., that $\varepsilon = 0$.

between children and real income is positive, the fall in $p_C$ induces an increase in fertility. The larger the number of averted births ($N_{max} - N$), the larger will be this income effect. It is, therefore, possible to observe an increase in fertility induced by effective governmental family planning programs if the income elasticity of fertility is positive and strong.

The model also predicts that the reduction in contraceptive costs will also induce substitution and income responses in health. These relationships cannot be signed, however. If the quantity and quality of children are viewed by the parents as substitutes, the reduction in $p_C$ will, ignoring income effects, increase the average health of children and reduce the mortality rate. If N and H are viewed as complements the opposite will occur. If health and income are positively associated health per child will be augmented and mortality reduced due to the real income gain brought about by the reduction in contraceptive costs, the magnitude again depending upon the desired number of births averted.

A reduction in the costs of health $p_1$ will similarly lead to an unambiguous increase in health and decline in mortality, given positive income effects. If N and H are substitutes, N will decline only if the substitution effect of a reduction in $p_1$ exceeds the income effect; if they are complements fertility will unambiguously rise.

A reduction in the component of mortality ($\bar{m}$) unaffected by family allocative decisions will alter H and N in a predictable fashion only with further assumptions about the utility function.* Indeed, a reduction in

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*If $U_{Nm} > 0$, so that the marginal utility of live births increases the larger is the mortality rate, i.e., surviving children have positive marginal utility, if $U_{Hm} > 0$, so that with fewer surviving children the marginal utility of health rises, and if $U_{mm} < 0$ so that the (negative) marginal utility of deaths decreases in absolute value with greater mortality, then if N and H are independent in the sense that utility constant cross-price effects are zero, both health and fertility will fall as $\bar{m}$ falls. If N and H are substitutes, the fertility effect is mitigated or reversed, while if they are complements the mortality effect is mitigated or reversed.

m may reduce measures of health as some of the gain to reduced mortality is taken in the form of consuming other commodities. One might expect that the number of surviving children would increase with exogenous reductions in the mortality rate even if N falls, but this result does not rigorously follow without further restrictions on the model.* Of course, the household must be made better off by price reductions regardless of the form in which these gains are ultimately taken.

B. Empirical Procedure

The model as outlined yields a system of demand equations for N, H, and Z with the mortality rate a derived demand function deducible from H according to the relationship $m = \bar{m} + m(H)$. These demand equations are

$$N = N(p_N, p_C, p_H, p_Z, Y, \bar{m})$$
$$H = H(p_N, p_C, p_H, p_Z, Y, \bar{m})$$
$$Z = Z(p_N, p_C, p_H, p_Z, Y, \bar{m})$$
$$M = \bar{m} + m[H(p_N, p_C, p_H, p_Z, \bar{m})]$$
$$= M(p_N, p_C, p_H, p_Z, Y, \bar{m})$$

A single cross-section of household observations is unlikely to contain direct price variation of substantial degree. However, as already argued, geographical variations in government interventions with respect to family planning and health care can be viewed as just such price variation. If these programs are effective, we can thus obtain information about the responsiveness of households to changes in prices which are relevant to fertility and health investment decisions.

Linearizing these demand functions as a first-order approximation

*There is a further statistical problem in that a health program may have a positive impact by reducing mortality and actually decreasing measures of average health of surviving children. In other words the health of all children could improve while the average health of surviving children declines because some children in poor health now survive.

permits estimation by an ordinary least squares technique. We restrict our attention to the fertility, health and mortality demand equations. Notice that qualitative information about the demand for health is contained in the mortality equation so that it is not really necessary to estimate both except as it provide internal consistency checks.

## II. DATA

### A. India

The data from India matches household survey data with district level census data on health and family planning programs and infrastructure. The survey was conducted by the National Council of Applied Economic Research over the years 1968-1971 for approximately 4000 rural households and was national in scope. Information on births and deaths was collected for each adult woman in the household. Other information useful for this analysis consisted of the woman's age, the educational attainment of the woman and spouse, and land status and acreage owned. No useful measures of health status are contained in the survey.

The information on governmental programs was collected from the 1971 Indian Census. District Census Handbooks provide information on family planning facilities, health facilities and primary water sources. Two measures were extracted, the fraction of villages in a district with each particular type of service and the total number of facilities of each type located in the district. Although we experimented with both, the results did not widely differ and we felt that the former was somewhat more appropriate since it reflects at least minimal coverage.

Approximately 80 percent of the district level handbooks could be located in India or at Yale. In addition, not every district reported the same information. Only about 50 percent of the districts had all of the data on a comparable basis. Since we did not wish to alter the sample of households in assessing different programs, we restricted attention to those districts with full information. In addition, the final sample was restricted to women between the ages of 15 and 44 because pregnancy and child mortality histories are unlikely to be accurate for older women. The total sample reflecting all of these restrictions consisted of 1151 women.

Descriptive statistics and variable definitions for this sample are presented in Table 1 below. Most of the variables are self-explanatory. A brief discussion of the program variables, however, is useful as is some historical perspective.

The family planning program can be traced as far back as 1930. The effort has grown rapidly and was accorded top priority in the Five Year Plan ending in 1979 with a budget of Rs 5160 million. In the Five Year Plan commencing in 1951, only Rs 6.5 million was allocated. As of 1972, there were over 5000 rural family planning centers with over 32,000 rural sub-centers. However, construction of clinics has always lagged behind schedule due to bureaucratic rather than financial problems. These centers are part of a national contraceptive distribution system which provide contraceptives either free or at subsidized rates. The overall program has not been viewed as successful, as evidenced by the declaration of an Emergency in June 1975 during which time forced sterlization was emphasized. It was estimated that as of 1973, only 15 percent of all married couples employed non-traditional contraceptive methods. However, no national empirical studies which take into account family behavior and health to estimate the impact of such programs exist. The crude rural birth rate was 39 per thousand in 1967 and 35 in 1973, although the target rate was 32. The original target of 25 for 1975 has been rescheduled to 1984.

Table 1

Descriptive Statistics: India

| | | Mean | Standard Deviation |
|---|---|---|---|
| CEB: | Children ever born | 3.09 | 2.05 |
| LB: | Children born in last 2½ years | .394 | .531 |
| MR: | Mortality rate | .053 | .144 |
| AGE: | Mother's age | 29.9 | 7.25 |
| EDMP: | Fraction of mothers who have some primary schooling | .097 | .296 |
| EDMPP: | Fraction of mothers who have completed primary schooling but are not matriculates | .046 | .210 |
| EDMMP: | Fraction of mothers who are matriculates | .016 | .126 |
| EDFP: | Fraction of fathers who have some primary schooling | .226 | .419 |
| EDFPP: | Fraction of fathers who have completed primary schooling but are not matriculates | .184 | .387 |
| EDFMP: | Fraction of fathers who are matriculates | .144 | .352 |
| FPLAN: | Fraction of villages in district with a family planning clinic | .021 | .026 |
| HOSP: | Fraction of villages in district with a hospital | .017 | .047 |
| DISP: | Fraction of villages in district with a dispensary | .056 | .068 |
| OTHER: | Fraction of villages in district with other types of health facilities | .085 | .151 |
| TAP: | Fraction of villages in district with tap | .020 | .055 |
| PUMP: | Fraction of villages in district with pump | .121 | .321 |
| RIVER: | Fraction of villages in district with river | .087 | .134 |
| WELL: | Fraction of villages in district with well | .757 | .193 |
| TANK: | Fraction of villages in district with tank | .125 | .236 |

Health facilities reported in the District Census Handbooks are divided into hospitals, dispensaries, and a general "others" category. This latter category is primarily composed of health centers and sub-centers, and maternity and child welfare clinics. In some districts, TB clinics and nursing homes were also included. As of 1967, there were approximately 5000 primary health centers and 20,000 sub-centers in rural areas and over 6000 maternity and child health centers.

The water supply data was divided into as many categories as could accommodate comparability across districts. There is a residual "others" category which is quite varied across districts. The categories are not entirely mutually exclusive in the sense that some villages may have more than a single water source. However, interpreting them as the primary water source probably should not do great injustice. We would expect that the ranking of the water sources according to the quality of water associated with each source would be, from best to worst, taps, pumps and wells, rivers and tanks.

B. Philippines

The data for Philippine Households were collected in 1979 as part of this project. An earlier survey of rural Philippine Households conducted in 1975 and a resurvey of some of these households in 1977 provided a basis for the 1979 survey. Evenson, Popkin and King-Quizon (1979) discuss the 1975 and 1977 surveys in detail.

In the earlier studies attempts were made to collect data on nutritional status and on dietary intake of children. These studies did not show a high correlation between nutritional status and diet and given the high costs of obtaining individual dietary data we opted to obtain more accurate height and weight data than were obtained in earlier surveys.

Table 2

Descriptive Statistics: Philippines

| | Mean | Standard Deviation |
|---|---|---|
| CEB: Children Ever Born | 6.89 | 3.21 |
| MR: Mortality ratio (children under 10 years of age) | .090 | .141 |
| Age: Mother's age | 44.3 | 12.1 |
| ESCHM: Fraction of mothers with elementary school education | .811 | .392 |
| HSCHM: Fraction of mother's with high school education | .081 | .273 |
| COLLM: Fraction of mothers with college education | .034 | .181 |
| ESCAF: Fraction of fathers with elementary school education | .760 | .428 |
| HSCHF: Fraction of fathers with high school education | .139 | .346 |
| COLLF: Fraction offathers with college education | .030 | .172 |
| RHGP: Fraction of households with a rural health unit in the barrio | .699 | .459 |
| HLTP: Fraction of households with a herbolorio or hilot in the barrio | .956 | .205 |
| FPCP: Fraction of households with a family planning clinic in the barrio | .557 | .498 |
| BORSP: Fraction of households with a resupply station in the barrio | .743 | .438 |
| YRSHU: No. of years RHUP in existence | 10.4 | 10.4 |
| YRSHLT: No. of years HLTP in existence | 27.3 | 14.8 |
| YRSFPC: No. of years FTCL in existence | 5.98 | 12.3 |
| YRSBOR: No. of years BORSP in existence | 6.41 | 5.72 |

It was possible within the limited resources available in this project to resurvey 320 of the 576 households surveyed in 1975. Since a new sample was not required we were able to do this at low cost. A copy of the instrument utilized is Appended to this report. Emphasis was placed on the measurement of height and weight and on obtaining updated demographic and mortality data.

Table 2 summarizes the data used in the comparative analysis of Philippine and Indian data (see IV). These are household level data and barrio level data. The major health variables at the barrio level are:

1. The presence of a rural health unit. These units are the primary units of the public health service in the Philippines. They dispense medicine and drugs. They provide services of doctors and nurses on a periodic basis.

2. The presence of a Family Planning Clinic. These family planning clinics are usually part of the rural health center. They provide counseling and engage in extension activities.

3. The presence of a resupply station. These stations dispense contraceptives to families requesting them. Typically this function is carried on by a "sari sari" store or shop in the barrio.

Data were collected on family planning methods in use by Philippine families in the sample. These are summarized by educational level of the mother in Table 3. This table provides a partial view indicating that mothers with high school and college have higher contraceptive usage. In the following section we will see that this does not hold up in more general regression analysis.

Discussion of child health data is deferred to section V.

Table 3

Frequency of Family Planning Methods in Use

| Family Planning Method | Schooling of Mother: Less Than 5 Years | Completed Elementary | High School and College |
|---|---|---|---|
| Rhythm and natural methods | 3 (.024) | 4 (.027) | 6 (.146) |
| Pills, condoms and IUD's | 9 (.073) | 12 (.08) | 12 (.292) |
| Sterilization | 5 (.04) | 13 (.086) | 1 (.024) |
| None | 106 (.86) | 121 (.80) | 22 (.53) |

## III. RESULTS

### A. India

Before reporting the regression results, it is necessary to match explicitly the prices of the theoretical model to the programs. Family planning clinics presumably reduce the price of contraception, $p_C$, which has competing income and substitution effects. Fertility will fall only if the latter dominates the former, assuming children and income are positively associated (children are "normal" goods). If children and income are negatively correlated or income and children are not correlated, fertility must unambiguously decline. The impact on health, if health is a normal good, will be positive if N and H are substitutes and ambiguous if N and H are complements.

Villages with hospitals and dispensaries should, for given quality of medical services, reduce the price of health, $P_1$. This should unambiguously raise the level of health and reduce mortality if health is a normal good. Fertility would rise if N is a normal good and N and H are complements and may fall if they are substitutes. Although hospitals and dispensaries may reduce $\bar{m}$ to some extent, we would expect the predominant impact to be on the direct price of health.

The residual other category, since it consists of health clinics and maternity clinics, reduces both $P_H$ and $P_N$. In the case where N and H are substitutes and health is a normal good, the increase in health due to the fall in $P_H$ is offset by a reduction in health due to the fall in the price of children. Similarly, the demand for children may rise or fall under analogous assumptions. Thus, this residual group may be associated with increased mortality.

If it is assumed that high quality water sources reduce the exogenous

Chart 1

Summary of Anticipated Program Effects

| | N and H are Substitutes | | N and H are Complements | |
|---|---|---|---|---|
| | Fertility | Mortality | Fertility | Mortality |
| FPLAN | ? | - | ? | ? |
| HOSP | ? | - | + | - |
| DISP | ? | - | + | - |
| OTHER | ? | ? | ? | ? |
| TAP | Same order as mortality or exact mirror image | Most negative or least positive | Most negative or least positive | Same order as fertility or exact mirror image |
| PUMP | | | | |
| WELL | | | | |
| RIVER | | | | |
| TANK | | least negative or most positive | Least negative or most positive | |

component of $\bar{m}$, we would anticipate lower mortality unless N and H are strong complements and lower fertility unless N and H are strong substitutes. Given an omitted category of unknown quality, we cannot sign the effects though the ranking should be as previously stated.

As far as the household level variables are concerned, we would expect the following patterns to emerge. The farm non-farm distinction as well as the size of farm should capture income effects. The woman's education may be related to several factors: if more highly educated women have higher market wage rates, there is a substitution effect away from children if children require relatively more of mother's time while there is an income effect in the opposite direction if children are normal goods; if more highly educated women are more perfect contraceptors so that they face a lower effective $P_C$, fertility will be lower due to a substitution effect and higher due to an income effect as previously discussed; if more educated women are more efficient health producers so that $P_H$ is lower for them, fertility will be lower due to a substitution effect if N and H are substitutes but higher due to an income effect. With respect to father's education, if father's time is a relatively unimportant input into children and health, father's education as it implies a greater wage rate will induce solely an income effect. We, thus, expect father's education to be more positively associated with fertility than mother's education. As far as the health effect of education is concerned, the price differences outlined above do not yield an unambiguous comparison between mother's and father's education.

A summary of the predictions for program effects is presented in Chart 1 and the regression results are reported in Table 4. The dependent variables are LB, the number of live births in the last 2 1/2 years, CEB, the number of children ever born, and MR, the number of child deaths divided by the number of children ever born. The sample size of the latter is slightly smaller since women with no live births are excluded. The more recent fertility measure (LB) may be more responsive to programs

TABLE 4

Fertility and Mortality Regressions:

India

| | LB | CEB | MR |
|---|---|---|---|
| Intercept | -.439 | -7.16 | .079 |
| | (1.69) | (8.90) | (.858) |
| Age | .077 | .495 | -.005 |
| | (4.47) | (9.32) | (.809) |
| $Age^2$ | -.002 | -.005 | .009x10 |
| | (5.53) | (6.17) | (.971) |
| Farm | .010 | .170 | -.021 |
| | (.253) | (1.44) | (1.89) |
| AcresxFarm | -.001 | -.006 | -.007x1( |
| | (.982) | (1.51) | (1.66) |
| EDFP | .012 | .621 | .004 |
| | (.298) | (5.07) | (.371) |
| EDFPP | .026 | .655 | -.011 |
| | (.602) | (4.86) | (.839) |
| EDFMP | -.007 | .496 | .002 |
| | (.137) | (3.10) | (.104) |
| EDMP | -.013 | .018 | .004 |
| | (.238) | (.105) | (.260) |
| EDMPP | -.013 | .250 | -.007 |
| | (.175) | (1.06) | (.327) |
| EDMMP | .192 | .032 | -.058 |
| | (1.58) | (.087) | (1.60) |
| FPLAN | -1.90 | .037 | -.790 |
| | (1.70) | (.011) | (2.34) |
| HOSP | -.423 | 8.35 | -.450 |
| | (.30) | (1.93) | (1.09) |
| DISP | -2.11 | -5.70 | -.751 |
| | (2.89) | (2.53) | (3.45) |
| OTHER | 1.23 | .105 | .620 |
| | (2.47) | (.060) | (4.27) |
| Tank | .020 | .052 | .023 |
| | (.226) | (.188) | (.844) |
| Well | .049 | .162 | .058 |
| | (.567) | (.601) | (2.26) |
| River | .518 | 2.24 | .173 |
| | (3.18) | (4.44) | (3.62) |
| Pump | .204 | .511 | .081 |
| | (3.68) | (2.98) | (5.08) |
| Tap | -.763 | -.361 | -.384 |
| | (1.48) | (.227) | (2.60) |
| $R^2$ | .113 | .431 | .078 |
| # observations | 1151 | 1151 | 1026 |
| F | 7.69 | 45.9 | 4.55 |

if they are of recent vintage. However, because there is more randomness in such a measure the precision of the estimates for the household level variables may be reduced.

Consider first the programs effects. The estimates indicate that family planning reduces fertility over the prior 2 1/2 years but has no impact on children ever born, as would be expected if the program has only recently been effective. Family planning also reduces the mortality rate. Hospital effects, except for CEB, are not estimated precisely. The positive relationship with CEB implies either that CEB is income elastic if N and H are substitutes or that N and H are complements. On the other hand, the effect of dispensaries is consistently negative on both fertility measures and on the mortality rate. This implies that if N is a normal good N and H must be substitutes. The positive impact of the "other" category on fertility and mortality is consistent with the effect of a lower $p_N$ outweighing the effect of a lower $p_H$.

The ranking of the water source effects on mortality are generally consistent with our intuition except that tanks are not estimated to be the lowest quality source. However, the regression coefficient on tanks is the only one of the set that is not "significant" at conventional levels. The signs of the effects of these variables on fertility are identical to their mortality effects. More importantly, the ranking of effects is identical in the fertility and mortality regression. This conformity is striking and lends considerable credibility to the results as only the same ranking on its mirror image is explicable in the context of the economic model.

The systematic effects of the household level variables on fertility are most apparent for children ever born. Age has the usual inverted U-shape. Landed households have more children except for very large farms over 28 acres. This latter result is difficult to explain in terms of income effects alone. Father's education has an overall positive impact on fertility, although the effect does not increase once any formal education is obtained.

Mother's education effects are much smaller than that of father's education as suggested by the theory but the coefficients have very high standard errors.

With respect to mortality, only income effects are discernibly different from zero. Farm households have lower mortality rates and the mortality rate decreases with farm size. As far as the education variables are concerned, only the most schooled mothers face lower mortality rates.

B. Philippines

The Philippine regressions of fertility and mortality are similar in design to those for India with a few modifications owing to data differences. The potentially most important feature of the Philippine data is the availability of information on the year in which each barrio-level program was first instituted. This mitigates the need for looking at both total fertility and recent fertility. In addition, since great care was taken in gathering fertility and child mortality information, we restrict our attention to mortality of children between the ages zero to nine. The benefit is that we do not have to restrict our sample only to younger women as was the case for India. Since there are only 296 observations, this is not an unimportant consideration.

Table 5 reports regression results for each of the three dependent variables, contraceptive use, children ever born and mortality (0-9). We report version 1 without the years in place variables and version 2 with these variables.

If we look first at the effects of the schooling of mothers, we note that this appears to be negative on family planning use, negative on children ever born and negative on mortality. In both cases mothers with high school and college have the stronger negative affects. Mothers appear not to be achieving this very directly through contraceptive use as conventionally defined however. Schooling of fathers has no important consequences on any of the dependent variables. Non-wage income has the expected positive effects on children ever born and negative but insignificant effects on child mortality.

**Table 5:** Contraceptive Use, Children Ever Born and Child Mortality Analysis: Philippine Data

| | Contraceptive Use | | CEB | | Mortality (0-9) | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (1) | (2) | (1) | (2) |
| Intercept | .599 | .395 | -8.71 | -9.12 | .176 | .128 |
| | (.21) | (.13) | (3.84) | (3.93) | (1.62) | (1.16) |
| Age | .063 | .074 | .666 | .687 | -.0034 | -.003 |
| | (.53) | (.62) | (7.03) | (7.17) | (.77) | (.58) |
| Age 2 | $.95 \times 10^{-3}$ | $.86 \times 10^{-3}$ | -.0064 | -.0066 | $.54 \times 10^{4}$ | $.47 \times 10^{4}$ |
| | (.77) | (.69) | (6.47) | (6.68) | (1.14) | (.99) |
| ESCHM | -1.83 | -1.85 | -3.84 | -.425 | -.015 | -.019 |
| | (3.54) | (3.52) | (.92) | (1.01) | (.75) | (.92) |
| HSCOLLM | -1.46 | -1.39 | -1.406 | -1.276 | -.039 | -.037 |
| | (1.82) | (1.71) | (2.17) | (1.97) | (1.30) | (1.21) |
| ESCHF | -.367 | -.334 | -.112 | -.056 | -.003 | -.003 |
| | (.72) | (.65) | (.27) | (.13) | (.17) | (.14) |
| HSCELLF | .236 | .264 | -.526 | -.474 | .015 | .018 |
| | (.36) | (.40) | (1.00) | (.91) | (.58) | (.72) |
| YNOTHER | $-.21 \times 10^{-4}$ | $-.19 \times 10^{-4}$ | $.38 \times 10^{4}$ | $.42 \times 10^{4}$ | $-.20 \times 10^{-8}$ | $-.37 \times 10^{-8}$ |
| | (.60) | (.53) | (1.29) | (1.45) | (.15) | (.03) |
| RHUP | -.369 | -.640 | .095 | -.358 | -.054 | -.035 |
| | (.67) | (.82) | (.21) | (.59) | (2.53) | (1.18) |
| YRSRHU | | .026 | | .040 | | .0005 |
| | | (.84) | | (1.70) | | (.36) |
| FPCP | 1.108 | 1.126 | .201 | .242 | .048 | .64 |
| | (2.07) | (1.193) | (.47) | (.51) | (2.35) | (2.90) |
| YRFDCP | | -.022 | | -.047 | | .0073 |
| | | (.12) | | (.33) | | (1.06) |
| BORSP | -.567 | -1.20 | -.181 | -1.33 | -1.037 | -.043 |
| | (1.09) | (1.17) | (.43) | (1.61) | (1.87) | (1.10) |
| YRSBOR | | .072 | | .128 | | .004 |
| | | (.88) | | (1.97) | | (1.37) |
| RHUXFPC | -.128 | -.151 | .026 | .056 | -.007 | -.090 |
| | (.73) | (.09) | (.18) | (.04) | (1.07) | (1.43) |
| $R^2$ | .337 | .340 | .275 | .289 | .079 | .094 |
| F | 13.1 | 10.3 | 9.78 | 8.14 | (2.21) | (2.08) |

The Program effects are not generally estimated with precision. The family planning centers have a positive impact on Contraceptive Use but do not affect Children Ever Born, though they appear to have a positive effect on child mortality which implies that N and H are complements if health is a normal good and family planning centers lower contraceptive costs. It is interesting to note that Barrio Supply Points, which are related to family planning programs in that they supply contraceptives, appear to have a negative but diminishing effect on Children Ever Born and on child mortality, a result more consistent with expectations. The Rural Health Units do appear to have a significant negative effect on child mortality.

These results on the whole are not identifying strong and clear program effects. In general they conform to expectations, however, and in light of relatively little good information on this topic deserve further scrutiny.

## IV. CHILD HEALTH IN THE PHILIPPINES

Our resurvey of Philippine households was designed primarily to obtain better data on child health. Past studies of child health have shown relatively weak correlations of measures of nutritional status, and chiefly height and weight measures, and dietary intake. Given the limited resources available to us for further data collection we opted to stress the collection of accurate height and weight data for children in our resurvey. As the instrument in the Appendix indicates we also attempted to obtain

morbidity data and family planning data.

Table 6 summarizes our height and weight data by sex and age of child. Height and weight are expressed as the average percent of the Philippine standard for the age and sex group in question. A total of 1192 children were included in the sample. The average percent of student height for the sample was .94 while the percent of standard weight was .84.

Our review of the child health literature suggests that these measures while imperfect in a number of respects are probably the best indicators available. Some researchers use weight/height as a percent of standard, but this measure is meaningful only if height is strictly genetically determined. This is clearly not so and we find this particular measure to be very imperfect. (In later analysis we attempt to control for genetic factors by including parents' height.)

Table 7 reports height and weight as a percent of standard by parental schooling. It appears that relatively little correlation with schooling exists. We report these data simply to indicate their nature. Obviously we require a more systematic examination to measure the effects of various variables in child health.

Our analysis of this data is guided by the same model which treated child mortality as a special case of child health. The results reported in Table 8 are far from being definitive. They do show general consistency between age groups of children. They also show some consistency between height as a percent of standard and weight as a percent of standard as measures of child health. We would expect the height measure to have less "noise" from unspecified effects than

Table 6

Height and Weight as Percent of Standard by Parental Schooling

| Schooling of | | Height | | Weight | |
|---|---|---|---|---|---|
| Mother | Father | Male | Female | Male | Female |
| None | None | .97 | .97 | .96 | .97 |
| None | Elementary | .95 | .96 | .88 | .85 |
| Elementary | None | .94 | .94 | .85 | .85 |
| Elementary | Elementary | .94 | .94 | .84 | .82 |
| Elementary | High School | .92 | .95 | .85 | .78 |
| High School | Elementary | .95 | .95 | .84 | .77 |
| High School | High School | .98 | .97 | .89 | .86 |

Table 7

Height and Weight as Percent of Standard: Laguna Resample

| | Males | | | | Females | | | |
|---|---|---|---|---|---|---|---|---|
| Age | HT | WT | WT/HT | CV(HT/WT) | HT | WT | WT/HT | CV(HT/WT) |
| 0 | .84 | .60 | .69 | 23.3 | .87 | .72 | .81 | 25.9 |
| 1 | .94 | .84 | .80 | 8.2 | .95 | .84 | .88 | 20.4 |
| 2 | .91 | .82 | .89 | 10.5 | .94 | .83 | .88 | 11.1 |
| 3 | .93 | .85 | .91 | 7.7 | .93 | .81 | .86 | 11.5 |
| 4 | .92 | .83 | .90 | 8.1 | .94 | .83 | .88 | 7.8 |
| 5 | .93 | .86 | .92 | 11.5 | .95 | .85 | .89 | 7.1 |
| 6 | .94 | .86 | .91 | 8.1 | .94 | .81 | .86 | 7.3 |
| 7 | .95 | .86 | .91 | 8.1 | .94 | .81 | .86 | 7.3 |
| 8 | .93 | .83 | .88 | 10.5 | .94 | .83 | .88 | 15.8 |
| 9 | .94 | .85 | .90 | 9.7 | .92 | .76 | .83 | 9.0 |
| 10 | .92 | .76 | .83 | 9.0 | .94 | .79 | .84 | 9.4 |
| 11 | .91 | .81 | .86 | 10.9 | .93 | .81 | .86 | 13.8 |
| 12 | .93 | .79 | .85 | 9.3 | .94 | .80 | .85 | 13.8 |
| 13 | .91 | .76 | .83 | 15.8 | .94 | .81 | .85 | 12.3 |
| 14 | .95 | .83 | .87 | 12.4 | .93 | .82 | .88 | 15.7 |
| 15 | .95 | .83 | .88 | 12.4 | .95 | .89 | .93 | 16.4 |
| 16 | .92 | .82 | .87 | 11.6 | .96 | .84 | .87 | 12.5 |
| 17 | .95 | .85 | .89 | 10.9 | .95 | .83 | .87 | 14.5 |
| 18 | .96 | .87 | .90 | 10.5 | .96 | .88 | .91 | 9.9 |
| 19 | .97 | .92 | .94 | 10.0 | .95 | .85 | .90 | 10.6 |
| 20 | .97 | .91 | .97 | 7.0 | .93 | .75 | .81 | 9.4 |
| 21 | .97 | .90 | .93 | 6.5 | .97 | .90 | .93 | 6.4 |

Table 8

Regression Analysis Height and Weight of Children as Percent of Standard: Philippines

| | Height | | | | Weight | | | |
|---|---|---|---|---|---|---|---|---|
| | Children 0-5 | | Children 6-13 | | Children 0-5 | | Children 6-13 | |
| Intercept | .911 | .428 | .936 | .628 | .887 | .001 | .811 | .402 |
| | (36.9) | (2.0) | (84.4) | (8.2) | (17.54) | (.01) | (29.5) | (2.13) |
| ESCHM | .016 | .013 | -.002 | -.005 | .012 | .005 | .012 | .010 |
| | (1.41) | (1.07) | (.37) | (.97) | (.52) | (.22) | (.86) | (.70) |
| HSCOLLM | .043 | .035 | .019 | .0015 | .033 | .006 | .019 | -.011 |
| | (2.83) | (2.00) | (1.99) | (.14) | (1.04) | (.17) | (.79) | (.42) |
| ESCHF | -.024 | -.017 | -.011 | -.009 | -.046 | -.034 | -.017 | -.006 |
| | (2.09) | (1.47) | (1.98) | (1.46) | (1.98) | (1.46) | (1.21) | (.42) |
| HSCOLLF | -.005 | -.003 | -.006 | .060 | -.004 | -.005 | -.005 | -.011 |
| | (.31) | (.19) | (.73) | (1.10) | (.11) | (.14) | (.26) | (.54) |
| YNOTHER | $.12x10^{4}$ | $.13x10^{4}$ | $-.79x10^{-8}$ | $-.20x10^{-8}$ | $.29x10^{4}$ | $41x10^{4}$ | $-.11x10^{-5}$ | $.11x10^{8}$ |
| | (.67) | (.68) | (1.53) | (1.32) | (.79) | (1.09) | (.89) | (.01) |
| RHUP | -.009 | -.004 | -.004 | -.004 | -.055 | -.038 | -.002 | -.010 |
| | (.54) | (.21) | (.49) | (.45) | (1.56) | (1.06) | (.08) | (.44) |
| YRSRHUP | .0013 | .0013 | -.0004 | -.0004 | .0022 | .0014 | -.0012 | -.0019 |
| | (1.92) | (1.64) | (1.02) | (1.13) | (1.59) | (.93) | (1.50) | (2.07) |
| FPCP | -.030 | -.023 | -.014 | -.011 | -.045 | -.026 | -.014 | -.011 |
| | (2.18) | (1.50) | (2.16) | (1.61) | (1.59) | (.88) | (.88) | (.68) |
| YRFPCP | -.002 | -.002 | -.0004 | -.0009 | -.013 | -.013 | .0012 | -.0011 |
| | (.47) | (.63) | (.19) | (.43) | (1.59) | (1.68) | (.23) | (.21) |
| BARSP | -.007 | -.011 | .023 | .023 | -.085 | -.080 | .20 | .074 |
| | (.34) | (.44) | (1.87) | (1.78) | (1.78) | (1.62) | (2.37) | (2.32) |
| YRBSP | -.0005 | .0007 | -.002 | -.002 | .002 | .004 | -.006 | -.005 |
| | (.29) | (.38) | (2.34) | (1.87) | (.61) | (1.05) | (2.47) | (1.97) |
| RHUXFPC | .0188 | .0185 | .014 | .019 | .116 | .116 | .010 | .034 |
| | (.51) | (.50) | (.79) | (1.03) | (1.56) | (1.59) | (.22) | (.71) |
| SEX(female) | .020 | .019 | .0011 | .0024 | .010 | .006 | -.009 | -.002 |
| | (2.12) | (1.82) | (.24) | (.49) | (.51) | (.31) | (.78) | (.17) |
| PARHY | | .0038 | | .0025 | | .0071 | | .0033 |
| | | (2.29) | | (4.09) | | (2.16) | | (2.17) |
| $R^2$ | .124 | .157 | .091 | .138 | .066 | .084 | .042 | .071 |
| F | (2.3) | (2.5) | (3.3) | (4.3) | (1.2) | (1.3) | (1.5) | (2.0) |

the weight measure.

We report two regressions for each measure for each age group of children. The second includes the average of the parents' height as a percent of standard as a heredity control variable. It is an imperfect measure because it is partly determined by the same environment which affects child health. We report it as an experiment to see whether our results stand up in its presence. In general they do.

In the height regressions we appear to be identifying a positive effect of mothers' schooling in the 0-5 group. This holds less strongly in the 6-13 group. Mothers' schooling has a less identifiable impact on weight. The negative effects of father's elementary schooling in both the height and weight regressions are somewhat puzzling. We have no ready explanations.

We would expect income effects to be positive. This holds to some extent for the 0-5 group but not for the 6-13 group. In general, we obtain smaller effects for the 6-13 group indicating possibly that the effects we identify are not strongly cumulative over time. Female children appear to do better than male children by the height measures but this effect is not significant for the older children.

The Program variables do not perform impressively. The number of years that a barrio has a rural health center appears to have a positive effect on the health of the younger children,but this is not the case for the older children. Family Planning Clinics appear to have a negative effect except when combined with a rural health unit. The negative effect is consistent with the positive mortality effect noted previously.

SUMMARY

We have presented in this research a theoretical framework for assessing the impact of governmental efforts at reducing fertility and improving child health. We have also developed an empirical methodology in the context of the theoretical model and applied it to data from India and the Philippines. Several points are worth stressing. First, government policy cannot be considered in isolation. Households choose to a great extent their family size and child health investments. Single objective policies will impact on other behavior; family planning programs will alter the parental demand for child health and health programs will alter fertility simply because child health and fertility are joint household decisions. Second, government policies can only be accurately evaluated if programs are randomly allocated to households with respect to fertility and health, or if the political decision rule is known by the evaluators. Third, the theoretical model is empirically testable in the sense that it is subject to tests of consistency. It would seem to us crucial that evaluation be conducted within a theoretical framework.

The results are too many to summarize briefly. It is sufficient to note that none of our results are inconsistent with our behavioral model. Confidence in the quantitative estimate can, however, only be obtained with replication and further study.

## Reference

Evenson, R., B. Popkin and E. King-Quizon, "Nutrition, Work and Demographic Behavior in Rural Philippine Households: A Synopsis of Several Laguna Household Studies," Economic Growth Center Discussion Series No. 308, January 1979.

## A. Mathematical Appendix

The family maximizes the utility function

(1) $U = U(N, H, m)$

subject to the budget contraint

(2) $Y = P_N N + P_1 H + P_C(N_{max} - N)$

and the mortality relation

(3) $m = \bar{m} + m(H) \qquad m'(H) > 0$

First-order conditions are given by

(4) $U_N - \lambda(P_N - P_C) = 0$

(5) $U_H + m'(H)U_m - \lambda P_1 = 0$

and (2).

Total differentiation of (4), (5), and (2) yields a displacement system given by the following matrix equation.

$$\begin{pmatrix} \lambda & 0 & -\lambda & 0 & -U_{Nm} \\ 0 & \lambda & 0 & 0 & -(U_{Hm}+m'U_{mm}) \\ N & H & (N_{max}-N) & -1 & 0 \end{pmatrix} \begin{pmatrix} dP_N \\ dP_1 \\ dP_C \\ dY \\ d\bar{m} \end{pmatrix} = \begin{pmatrix} U_{NN} & U_{NH}+U_{Nm}m' & -(P_N-P_C) \\ U_{HN}+m'U_{mN} & U_{HH}+2U_{Hm}m' + U_m m'' & -P_1 \\ -(P_N-P_C) & -P_1 & 0 \end{pmatrix} \begin{pmatrix} dN \\ dH \\ d\lambda \end{pmatrix}$$

Letting $\Delta_{ij}$ be the $ij^{th}$ co-factor and $\Delta$ the determinant of the left-hand side square matrix, the following price and income effects can be derived.

$$\frac{dN}{dP_C} = -\lambda \frac{\Delta_{11}}{\Delta} + (N_{max} - N) \frac{\Delta_{31}}{\Delta}$$

$$\frac{dH}{dP_C} = \lambda \frac{\Delta_{12}}{\Delta} - (N_{max} - N) \frac{\Delta_{32}}{\Delta}$$

$$\frac{dN}{dY} = -\frac{\Delta_{31}}{\Delta}$$

$$\frac{dH}{dY} = +\frac{\Delta_{32}}{\Delta}$$

$$\frac{dN}{d\bar{m}} = -U_{Nm} \frac{\Delta_{11}}{\Delta} + (U_{Hm} + m'U_{mm}) \frac{\Delta_{21}}{\Delta}$$

$$\frac{dH}{d\bar{m}} = U_{Nm} \frac{\Delta_{12}}{\Delta} - (U_{Hm} + m'U_{mm}) \frac{\Delta_{22}}{\Delta}$$

The discussion and interpretation of these relationships are given in the text.

## B. Questionnaire Appendix

Barangay Survey '79

1.1. Name of barangay _____

1.2. Municipality _____ 1.3. Province _____

2.1. Educational institutions:

| School | Number of Schools | Year Started | Location of School<br>1 - Same barrio<br>2 - Other barrio |
|---|---|---|---|
| a. Primary, public | | | |
| b. Intermediate, public | | | |
| c. Primary, private | | | |
| d. Intermediate, private | | | |
| e. Secondary, public | | | |
| f. Secondary, private | | | |
| g. College | | | |
| h. Others (specify) | | | |

3.1. Social services operating within the past month in the barangay:

| Service/facility | Present in barangay<br>1 - Yes<br>0 - No | Year started | Is there a doctor?<br>1 - Yes<br>0 - None | No. of personnel present | No. of users past week |
|---|---|---|---|---|---|
| a. RHU/CHC | | | | | |
| b. Private medical clinic | | | | | |
| c. Hilot/herbolario | | | | | |
| d. Puericulture center | | | | | |
| e. Private hospital | | | | | |
| f. Public hospital | | | | | |
| g. FP Center | | | | | |
| h. TB Center | | | | | |
| i. Maternity clinic | | | | | |
| j. MSSD day care center | | | | | |
| k. Barrio re-supply point | | | | | |

4.1. Is electricity available in the barangay? [ ] 1 - Yes 0 - No

4.2. Year electricity first provided in the barangay: _____

Laguna Resurvey '79

## Coding Instructions*

| | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|
| HHNO | 1.2 Respondents's ID No. | | 1 | 1-3 | F3.0 |
| BARRIO | 1.3 Name of Barangay | | 1 | 4-5 | F2.0 |
| | Isla | 01 | | | |
| | Balian | 02 | | | |
| | Sabang | 03 | | | |
| | Cabanbanan | 04 | | | |
| | Sambat (Borlongan) | 05 | | | |
| | Bongkol | 06 | | | |
| | San Ignacio | 07 | | | |
| | San Antonio I | 08 | | | |
| | San Antonio II | 09 | | | |
| | Sto. Angel | 10 | | | |
| | San Felix | 11 | | | |
| | San Benito | 12 | | | |
| | Loma | 13 | | | |
| | Timbao | 14 | | | |
| | Lankiwa | 15 | | | |
| | Calabuso | 16 | | | |
| | San Roque | 17 | | | |
| | Sto. Nino | 18 | | | |
| | Balayhangin | 19 | | | |
| | Dayap | 20 | | | |
| TOWN | 1.4 Name of Municipality | | 1 | 6 | F1.0 |
| | Pangil | 1 | | | |
| | Pagsanjan | 2 | | | |
| | Magdalena | 3 | | | |
| | Liliw | 4 | | | |
| | San Pablo City | 5 | | | |
| | Victoria | 6 | | | |
| | Binan | 7 | | | |
| | San Pedro | 8 | | | |
| | Calauan | 9 | | | |
| | Columns 1-6 becomes Respondent ID for all cards | | | | |
| DECKNO | Deck No. | | 1 | 7 | F1.0 |
| | Demographic characteristics | 1 | | | |
| | Schooling | 2 | | | |
| | Morbidity cases | 3 | | | |
| | Pregnancy and delivery history, FP practice | 4 | | | |
| | Data on wages | 5 | | | |
| HHMC | 1.5 Household Member Number | | 1-16 | 8-9, 40-41 | F2.0 |
| | Father | 21 | | | |
| | Mother | 22 | | | |
| | Children (from oldest to youngest) | 01 to 20 | | | |
| | Grandchildren (from oldest to youngest) | 31 to 40 | | | |

*Please see attached Table Format.

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| SEX | 1.6 | Sex of each member of the household | | | 10, 42 | F1.0 |
| | | Male | 1 | | | |
| | | Female | 2 | | | |
| BIRTHY | 1.7 | Month and year of birth of each member of the nuclear family (including grandchildren) | | | 11-14, 43-46 | F4.0 |
| | | January | 01 | | | |
| | | February | 02 | | | |
| | | March | 03 | | | |
| | | April | 04 | | | |
| | | May | 05 | | | |
| | | June | 06 | | | |
| | | July | 07 | | | |
| | | August | 08 | | | |
| | | September | 09 | | | |
| | | October | 10 | | | |
| | | November | 11 | | | |
| | | December | 12 | | | |
| | | For year, e.g. 1972 code is | 72 | | | |
| | | Not applicable | 99 | | | |
| | | Don't know | 88 | | | |
| AGEYR | 1.8 | Age in years | | | 15-16, 47-48 | F2.0 |
| BIRTHP | 1.9 | Birthplace of each member of the nuclear family (including grandchildren) | | | 17, 49 | F1.0 |
| | | same barrio/barangay | 1 | | | |
| | | same municipality | 2 | | | |
| | | same province | 3 | | | |
| | | elsewhere (different province) | 4 | | | |
| EDUC | 1.10 | Educational Attainment | | | 18-19, 50-51 | F2.0 |
| | | None | 00 | | | |
| | | Kindergarten/pre/katon | 10 | | | |
| | | 1st grade elementary | 11 | | | |
| | | 2nd grade elementary | 12 | | | |
| | | 3rd grade elementary | 13 | | | |
| | | 4th grade elementary | 14 | | | |
| | | 5th grade elementary | 15 | | | |
| | | 6th grade elementary | 16 | | | |
| | | 7th grade elementary | 17 | | | |
| | | 1st year HS | 21 | | | |
| | | 2nd year HS | 22 | | | |
| | | 3rd year HS | 23 | | | |
| | | 4th year HS | 24 | | | |
| | | 1st year college | 31 | | | |
| | | 2nd year college | 32 | | | |
| | | 3rd year college | 33 | | | |
| | | 4th year college (without degree) | 34 | | | |

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| | | 4th year college (with degree) | 37 | | | F2.0 |
| | | 5th year college (without degree) | 38 | | | |
| | | 5th year college (with degree) | 39 | | | |
| | | Post graduate (no degree yet) | 35 | | | |
| | | Post graduate (with degree) | 36 | | | |
| | | Vocational | 40 | | | |
| | | Others (specify) | 77 | | | |
| | | Don't know | 88 | | | |
| DEATHY | 1. | Month and year died (same as in 1.7) | | | | |
| | | NAP (particular family member is still alive) | 9999 | | 52-55 / 20-23 | F4.0 |
| CIVST | 1.12 | Civil Status | | | 24 / 56 | F1.0 |
| | | Single | 1 | | | |
| | | Married | 2 | | | |
| | | Separated | 3 | | | |
| | | Widow/widower | 4 | | | |
| YRMAR | 1.13 | Year Married | | | 25-26 / 57-58 | F2.0 |
| | | Record last two digits of year when married, e.g. 1976 | 76 | | | |
| | | For R's children who are still single | 99 | | | |
| | | Don't know | 88 | | | |
| GRANDCH | 1.14 | Number of children at present of R's married children, whether alive or now deceased | | | 27-28 / 59-60 | F2.0 |
| | | Married but childless at time of interview | 00 | | | |
| | | For R's children who are still single | 99 | | | |
| | | Item 1.5, 21 and 22 | xx | | | |
| ATHOME | 1.15 | Whether R's child still in R's house | | | 29 / 61 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| | | NAP (for deceased) | 9 | | | |
| | | Item 1.5, 21 and 22 | x | | | |
| RESD | 1.16 | Child's new residence | | | 30 / 62 | F1.0 |
| | | same barrio/barangay | 1 | | | |
| | | same town | 2 | | | |
| | | same province | 3 | | | |
| | | elsewhere | 4 | | | |
| | | NAP (for child who lives with R or those deceased) | 9 | | | |
| | | Item 1.5, 21 and 22 | x | | | |

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| HEIGHT | 1.17 | Height in inches (Two decimal places) | | | 31-34 / 63-66 | F4.2 |
| | | NAP | 9999 | | | |
| | | Missing | 0000 | | | |
| WEIGHT | 1.18 | Weight in lbs. (Two decimal places) | | | 35-39 / 67-71 | F5.2 |
| | | NAP | 9999 | | | |
| | | Missing | 0000 | | | |
| | | ID No. | | 17 | 1-6 | |
| | | Deck No. | 2 | 17 | 7 | |
| STUDYC | 2.2 | Code No. of Family Member Studying at Present | | 17-22 | 8-9 | F2.0 |
| TYSCHO | 2.3 | Whether he/she is studying in private or public school | | | 10 | F1.0 |
| | | Public | 1 | | | |
| | | Private | 2 | | | F1.0 |
| TBSLY | 2.4 | Total expenses last school year (June 78-June 79) for tuition fees, books and supplies (In pesos) | | | 11-17 | F7.2 |
| | | Don't know | 88 | | | F2.0 |
| WETRH | 2.5 | Allowance for transportation each week (In pesos) | | | 18-22 | F5.2 |
| WEPOH | 2.6 | Pocket money each week (In pesos) | | | 23-27 | F5.2 |
| STFHOST | 2.7 | Does he/she live away from home while studying | | | 28 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 2 | | | F2.0 |
| MOBODLOD | 2.8 | How much does he/she pay for lodging per month? (In pesos) | | | 29-33 | F5.2 |
| | | Lives away but does not pay for lodging | 000 | | | |
| | | NAP (does not live away from home) | 999 | | | F1.0 |
| ANYSICK | 3.1 | Did you or any member of your family get sick at any time during the past six months? | | 23-28 | 9 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | F1.0 |
| WHOSICK | 3.2 | Code of sick family member | | | 10-11 | F2.0 |

B.6

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| SICKTYPE | 3.3 | Names/symptoms of illness | | | 12-13 | F2.0 |
| | | Fever | 01 | | | |
| | | Influenza | 02 | | | |
| | | Common colds and cough | 03 | | | |
| | | Headache | 04 | | | |
| | | Stomachache | 05 | | | |
| | | Toothache | 06 | | | |
| | | Tuberculosis | 07 | | | |
| | | Chicken Pox | 08 | | | |
| | | Small Pox | 09 | | | |
| | | Measles | 10 | | | |
| | | Diarrhea | 11 | | | |
| | | Asthma | 12 | | | |
| | | Kidney Trouble | 13 | | | |
| | | Rheumatic Heart | 14 | | | |
| | | High Blood Pressure | 15 | | | |
| | | Gall Bladder Infection | 16 | | | |
| | | Urinary Infection | 17 | | | |
| | | Eye Defect | 18 | | | |
| | | Tonsilitis | 19 | | | |
| | | Others: | 20 | | | |
| FREQSICK | 3.4 | Frequency of occurrence (No. of times) | | | 14-15 | F2.0 |
| | | Continuous | 77 | | | |
| GRAILL | 3.5 | Gravity of illness | | | 16 | F1.0 |
| | | Not serious | 0 | | | |
| | | Serious | 1 | | | |
| | | DK (Don't know) | 8 | | | |
| NODASICK | 3.6 | Number of days sick | | | 17-18 | F3.0 |
| | 3.7 | Whether kept from work/school | | | 19 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| NODAABS | 3.8 | Number of days absent from school/work | | | 20-22 | F3.0 |
| | 3.9 | Brought to health facility | | | 23 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| THELF | 3.10 | Type of health facility | | | 24-25 | F2.0 |
| | | Hospital (Public) | 01 | | | |
| | | Clinic (Private) | 02 | | | |
| | | RHU/CHO | 03 | | | |
| | | Puericulture Center | 04 | | | |
| | | Nutrition Center (Malward) | 05 | | | |
| | | Herbolario/Hilot's house | 06 | | | |
| | | Hospital (Private) | 07 | | | |
| | | Hilot/Clinic/Hospital (Public) | 08 | | | |
| | | Others (specify) | 77 | | | |
| | | DK/NA | 88 | | | |
| | | NAP (Not brought to health facility) | 99 | | | |

| | | | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| CONF | 3.11 | Confined at health facility? | | | 26 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| COSTCONF | 3.12 | Cost of confinement and treatment | | | 27-33 | F7.2 |
| BUYMED | 3.13 | Medicine purchased | | | 34 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| COSTMED | 3.14 | Total cost of medicine | | | 35-40 | F6.2 |
| | 3.15 | | | | | |
| | 3.16 | Service/facility | | 29 | 8-9 | F2.0 |
| | 3.17 | Do you know of any of the following (3.16) where you and your family can obtain services and supplies? | | | 10 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| HLTH DIST | 3.18 | Distance from your house (in minutes) | | | 11-13 | F3.0 |
| | | Not applicable | 999 | | | |
| TRANSPRT | 3.19 | Kind of transport | | | 14 | F1.0 |
| | | Jeepney | 1 | | | |
| | | Bus | 2 | | | |
| | | Trimobile/Tricycle | 3 | | | |
| | | Calesa | 4 | | | |
| | | Walk | 5 | | | |
| | | Others (specify) | 7 | | | |
| | | Walk/Tricyle/Jeep | 8 | | | |
| | | Not applicable | 9 | | | |
| | | ID No. | | 30 | 1-6 | F2.0 |
| | | Deck No. | 4 | 30 | 7 | |
| PREG NOW | 4.1 | Are you pregnant right now? | | | 8 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| | | NAP (R ceased child-bearing 4 or more years ago) | 9 | | | |
| MONTH NOW | 4.2 | How many months pregnant are you right now? | | 30 | 9-10 | F2.0 |
| | | One month | 01 | | | |
| | | Two months | 02 | | | |
| | | DK/NA | 88 | | | |
| | | NAP (not pregnant at present) | 99 | | | |
| PREG79 | 4.3 | Year 1979 | 79 | | 11-12 | F2.0 |
| PREG78 | | 1978 | 78 | | | |
| PREG77 | | 1977 | 77 | | | |

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| PREG876 | 4.3 | Whether R was pregnant (last 3 years) | | | 13 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| TERM876 | 4.4 | Pregnancy termination | | | 14 | F1.0 |
| | | Live birth | 1 | | | |
| | | Still birth | 2 | | | |
| | | Miscarriage/abortion | 3 | | | |
| | | NAP | 9 | | | |
| | | R still pregnant | 0 | | | |
| | 4.5 | Age in months (if miscarriage) | | | 15 | F1.0 |
| | | Not applicable | 9 | | | |
| DELPL876 | 4.6 | Place of delivery | | | 16 | F1.0 |
| | | At home | 1 | | | |
| | | Private clinic | 2 | | | |
| | | Puericulture center | 3 | | | |
| | | RHU/CHO | 4 | | | |
| | | Hospital public | 5 | | | |
| | | Hospital private | 6 | | | |
| | | Others (specify) | 7 | | | |
| | | NAP | 9 | | | |
| DELAT876 | 4.7 | Delivery attendant | | | 17 | F1.0 |
| | | Household member | 1 | | | |
| | | Hilot/herbolario | 2 | | | |
| | | Doctor | 3 | | | |
| | | Nurse | 4 | | | |
| | | Midwife | 5 | | | |
| | | Health Aide | 6 | | | |
| | | Others (specify) | 7 | | | |
| | | Hilot/Doctor | 8 | | | |
| | | NAP | 9 | | | |
| DELCO876 | 4.8 | Cost of delivery (In pesos) | | | 18-23 | F6.2 |
| | | NAP | 999999 | | | |
| | | Respondent ID | | 31 | 1-6 | |
| | | Deck No. | 4 | 31 | 7 | |
| USEDFP | 4.9 | Have you ever used any FP method? | | 31 | 8 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| | | NAP (R does not know how to use any method) | 9 | | | |

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| PASTMETH | 4.10 | What method did you use? | | 31 | 9-10 | F2.0 |
| | | Natural method, i.e. withdrawal | 01 | | | |
| | | Pills, tablets (anovulants) | 02 | | | |
| | | Rhythm, calendar method only | 03 | | | |
| | | Rhythm, temperature/ symptoms/ovulation method | 04 | | | |
| | | IUD: loop, plastic Copper T, etc. | 05 | | | |
| | | Condom, prophylactic, "Gold coin", etc. | 06 | | | |
| | | Foam devices: tablets aerosol, emko | 07 | | | |
| | | Sterilization (female): tubal ligation | 08 | | | |
| | | Sterilization (male): vasectomy | 09 | | | |
| | | Others (specify) | 77 | | | |
| | | NAP (R does not know how to use any method) | 99 | | | |
| | 4.11 | When did you begin to use it? RECORD YEAR, e.g. FOR 1972, RECORD 72; FOR 1973, RECORD 73, ETC. | | 31 | 11-12 | F2.0 |
| | | NAP (R does not know how to use any method) | 99 | | | |
| USEFP | 4.12 | Are you currently using any FP method? | | 31 | 13 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| | | NAP (R does not know how to use any method) | 9 | | | |
| PRESMETH | 4.13 | What method do you currently use? (SAME CODE AS 4.10) | | 31 | 14-15 | |
| FPCLINIC | 4.14 | Do you know of a FP clinic where couples can obtain services and supplies? | | 31 | 16 | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| FPDIST | 4.15 | How far (in minutes) is this FP clinic from your house? USE THREE DIGITS FOR REPLY. THUS FIVE MINUTES WOULD BE 005; TEN MINUTES, 010, ETC. IF TIME IS GIVEN IN HOURS, CONVERT HOURS TO MINUTES. TWO HOURS WOULD BE 120, ETC. | | 31 | 17-19 | F3.0 |
| | | NAP (No knowledge of FP clinic) | 999 | | | |
| | | SKIP | 31 | 31 | 20-78 | F2.0 |
| | | Card No. | | 31 | 79-80 | |
| | | Respondent's ID | 32 | | 1-6 | |
| | | Deck No. | 5 | 32 | 7 | F1.0 |

| | | Information | Code | Card No. | Column No. | Format |
|---|---|---|---|---|---|---|
| | 5.1 | Code of family member | | 32-33 | | F2.0 |
| EARN78 | 5.2 | Earnings in 1978 | | | | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| WAGE78 | 5.3 | Normal Wage Per Day, 1978 | | | | F5.2 |
| | | NAP | 99999 | | | |
| EARN79 | 5.4 | Earnings, 1979 | | | | F1.0 |
| | | Yes | 1 | | | |
| | | No | 0 | | | |
| WAGE79 | 5.5 | Normal Wage Per Day, 1979 | | | | F5.2 |
| | | NAP | 99999 | | | |

Laguna Resurvey 1979

## LIST OF RESPONDENTS

### ISLA, PANGIL

| NAME OF HH HEAD | NAME OF WIFE | ID NO. |
|---|---|---|
| 1. Juan Aderes | Nieves Aderes | 726 |
| 2. Arturo Cawa | Susana Sta. Ana | 727 |
| 3. Arturo Cawasa | Honorata Cawasa | 729 |
| 4. Pio Flores | Victoria Flores | 781 |
| 5. Lazaro Jamandre | Dorotea Eliopo | 732 |
| 6. Fidel Mendoza | Toribia Mendoza | 734 |
| 7. Eutiquio Nieto | Sofia Cahinhinan | 735 |
| 8. Mateo Aguilar | Marina Aguilar | 736 |
| 9. Jose Tadle | Sixta Araneta | 737 |
| 10. Vidal Valiña | Alodia Valiña | 738 |
| 11. Anastacio Fuentes | Lourdes Bacaresas | 741 |
| 12. Ricardo Balibalos | Liceria Katigbak | 746 |
| 13. Emiliano Valiña | Eugenia Valiña | 747 |
| 14. Quinciano de Ramos Sr. | Nenita de Ramos Sr. | 701* |

### BALIAN, PANGIL

| | | |
|---|---|---|
| 1. Custodio Nebria | Maxima Reila | 701 |
| 2. Gelacio Icarangal | Juana Valen | 702 |
| 3. Romeo de la Cruz | Rosalinda de la Cruz | 703.1 |
| 4. Porfirio Cahigas | Juliana G. Cahigas | 704 |
| 5. Ruben Madiz | Sergia Madiz | 706 |
| 6. William Gabanis | Gregoria Gabanis | 709 |
| 7. Pedro Enesio | Beatriz Enesio | 710 |
| 8. Laurentino de Guia | Aurora de Guia | 711.1 |
| 9. Ricardo Valdez | Marina Valdes | 713 |
| 10. Dan Valin | Celinda Valin | 716 |
| 11. Servillano Gabot | Maria Cahigas | 719 |
| 12. Juanito Cahinhinan | Herminia Degala | 724 |
| 13. Cesario Diaz | Maura Diaz | 425 |
| 14. Bernardo Valino Sr. | Pacita Valino | 728 |

* Newly assigned ID number

## SABANG, PAGSANJAN

| | | | |
|---|---|---|---|
| 1. | Mario Barra | Saturnina Barra | 452 |
| 2. | Rogaciano Boysillo | Lourdes Elano | 453 |
| 3. | Antonio Cabila | Adelaida Cabila | 454 |
| 4. | Eufrocino Calma | Angelita Fabruada | 455 |
| 5. | Crispin Lubugin | Milagros Gabrido | 458 |
| 6. | Sergio Mendoza | Roberta Mendoza | 459 |
| 7. | Nicanor Semigala | Aurea Unson | 466 |
| 8. | Emeterio Mendoza | Maria Mendoza | 470 |
| 9. | Miguel Sacopla | Adelina Sacopla | 472 |
| | FHDO's | | |
| 10. | Filemon Fabroada | Jovita Ciceno | 456 |
| 11. | Rosendo Pasahol | Consolacion Pasahol | 16 |
| 12. | Leonardo Gabrido | Arlene Esconde | 10 |
| 13. | Sebastian Mendoza | Lucia Tanyag | 12 |
| 14. | Bienvenido Unson | Gloria Unson | 463 |
| 15. | Florentino Javier | Creselda Toana | 11 |
| 16. | Lorenzo Pasahol | Lolita Pasahol | 460 |

## CABANBANAN, PAGSANJAN

| | | | |
|---|---|---|---|
| 1. | Loreto Bautista | Ana Bautista | 427 |
| 2. | Benito Bermudez | Florina Cristobal | 428 |
| 3. | Emilio Mayani | Simeona Abanico | 429 |
| 4. | Cleto Porcopio | Juanita Fabruada | 430 |
| 5. | Sovero Sacluti | Natividad Sacluti | 431 |
| 6. | Donato Garcia | Herminia Garcia | 436.1 |
| 7. | Salvador del Mundo | Victoria del Mundo | 438 |
| 8. | Vicente Tainio | Adelaida Ramirez | 440 |
| 9. | Francisco Pasahol | Elvina Pasahol | 442 |
| 10. | Francisco Priola | Celedonia Dizon | 1444 |
| 11. | Victorino Calabit | Nenita Fabroada | 445 |
| 12. | Antonio Torralba | Zenaida Torralba | 446 |

## BONGKOL, LILIW

| | | | |
|---|---|---|---|
| 1. | Alfredo Roña | Bella Roña | 626 |
| 2. | Lucrecio Purante | Antonia Purante | 627 |
| 3. | Agripina Jimenez | Concepcion Samaniego | 628 |
| 4. | Lucio Ville | Generosa Ville | 630 |
| 5. | Emiliano Magnaye | Aurora Obelo | 631 |
| 6. | Bayani Arjona | Evelyn Persueña | 632 |
| 7. | Demeterio Arjona | Shaterlita Arjona | 633 |
| 8. | Rolando Esponga | Soledad Terrible | 640 |
| 9. | Buenaventura Guandeza | Leonor Borgonios | 639 |

| | | | |
|---|---|---|---|
| 10. | Simeon Tarabuco | Ofelia Obico | 642 |
| 11. | Eduardo Montesines | Maria Montesines | 643 |
| 12. | Perciverando Emlano | Editha Emlano | 644 |
| 13. | Roberto Esponga | Leonora Orenciana | 647 |

SAMBAT (BORLONGAN), MAGDALENA

| | | | |
|---|---|---|---|
| 1. | Ronciano Suyo | Antonia Suyo | 651 |
| 2. | Igmedio Conchada | Luzviminda Conchada | 672 |
| 3. | Guillermo Gallano | Josefina Gallano | 653 |
| 4. | Reynaldo Meriado | Felicidad Arceta | 656 |
| 5. | Sosimo Ariola | Juanita Coronado | 657 |
| 6. | Edilberto Trinidad | Florencia Trinidad | 658 |
| 7. | Tomas Dalisay | Eutiquia Mendoza | 661 |
| 8. | Onofre Munzon | Marcela Munzon | 663 |
| 9. | Marciano Sabado | Jovita Sabado | 665 |
| 10. | Fausto Belen | Teofila Belen | 668 |
| 11. | Faustino Ariola | Elena Puntihun | 670 |
| . | Igmedio Conchada | Luzviminda Conchada | 672 |

SAN IGNACIO, SAN PABLO CITY

| | | | |
|---|---|---|---|
| 1. | Jovencio Garcia | Eleonor Garcia | 226 |
| 2. | Leonardo Empimano | Nora Empimano | 228 |
| 3. | Ludivico Magnaye | Felisa Magnaye | 229 |
| 4. | Artemio Avanzado | Arceli Kalayag | 240 |
| 5. | Marcelo Caponpon | Esperanza Dado | 241 |
| 6. | Amador Ilagan | Paulina Ilagan | 245 |
| 7. | Nicolas Martinez | Aida Martinez | 234 |
| 8. | Dominador Calabia | Carmen Dalisay | 235 |
| 9. | Luis Briones | Rosario Briones | 236 |
| 10. | Francisco Gualberto | Ambrosia Gualberto | 238 |
| 11. | Eufrocino Cagitla | Juliana Cagitla | 239 |

## SAN ANTONIO II, SAN PABLO CITY

| | | | |
|---|---|---|---|
| 1. | Salustiano Mendoza | Dominga Mendoza | 331 |
| 2. | Manolo Cabrera | Felipa Cabrera | 332 |
| 3. | Mateo Arceo | Isabel Arceo | 336 |
| 4. | Pitacio Gahuman Jr. | Evelyn Luz Gahuman | 338 |
| 5. | Candido Abril | Gabina Ajida Abril | 339.1 |
| 6. | Pitacio Gahuman Sr. | Consurcia Bejamin | 340 |
| 7. | Julio Arceo | Francisca Calapiz | 341.1 |
| 8. | Nestor Cabrera | Nenita Bueno | 346.1 |
| 9. | Herminio Cabrera | Aurea Capuno (alternate) | 027* |
| 4. | [illegible] | | 656 |
| 5. | Se[illegible] FHDO's | | 657 |
| 6. | [illegible] | | 658 |
| 10. | Candido Alimagno | Catalina Alimagno | 23 661 |
| 11. | Evaristo Estera | Emilia Estera | 15 663 |
| 12. | Nestor Arraguas | Eduarda Esmilla | 37 665 |
| 13. | Leonardo Nato | Trinidad Olivo Nato | 22 668 |
| 14. | Felix Bisbe | Antonia Sulpico Bisbe | 26 670 |
| 15. | Arcadio Corpuz | Generosa Bedonia Corpuz | 24 672 |

## [illegible] CITY

| | | | |
|---|---|---|---|
| 1. | Jovencio [illegible] | [illegible] Cagaita | 226 |
| 2. | [illegible] | [illegible] | 228 |
| 3. | [illegible] | [illegible] Magnaye | 229 |
| 4. | Artemio [illegible] | [illegible] Maligay | 240 |
| 5. | [illegible] | [illegible] Dado | 241 |
| 6. | [illegible] | [illegible] Ilagan | 245 |
| 7. | Nicol[illegible] | [illegible] | 234 |
| 8. | Domin[illegible] | [illegible] Dalisay | 235 |
| 9. | Luis [illegible] | [illegible] Eulenia | 236 |
| 10. | Francisco [illegible] | [illegible] Gualberto | 238 |
| 11. | Eufrocino [illegible] | [illegible] Cagitla | 239 |

* Newly assigned ID number

| | | | |
|---|---|---|---|
| 1. | Tranquilino Dimaano | Eufrocina Dimaano | 13.0* |
| 2. | Pedro Torres | Liza Torres | 24.1 |
| 3. | Armando Calderia | Leonida Calderia | 176 |
| 4. | Sotero Hernandez | Alejandra Hernandez | 177 |
| 5. | Restituto Laluz | Rosalinda Laluz | 178 |
| 6. | Andrez Landicho | Eriberta Laluz | 179.1 |
| 7. | Clemente Soriano | Norma Lagko Soriano | 180 |
| 8. | Gonzalo Palma | Roberta Nava Palma | 181 |
| 9. | Isidro Palma | Lucita Emnecino Palma | 182 |
| 10. | Tomas Adilio | Lolita Alvarez Adilio | 183 |
| 11. | Nicolas Primo | Margarita Primo | 185 |
| 12. | Rogelio Lubrica | Teresita Atiw Lubrica | 186 |
| 13. | Valeriano Santiago | Guadalupe Santiago | 187 |
| 14. | Hermogenes Caponpon | Clarita Domingo Caponpon | 188 |
| 15. | Bernardo Ramirez | Teodorica Ramirez | 189 |

FHDO's

| | | | |
|---|---|---|---|
| 16. | Donato Dimaano | Estrella Dimaano | 14 |
| 17. | Anastacio Laluz (deceased) | Juanita Makalintal | 17 |
| 18. | Pedro Laudencia | Maxima Arcillas | 28 |
| 19. | Basilio Diangkinay | Felicidad Belen Diangkinay | 23 |
| 20. | Rufino Torres | Faviana Torres | 11 |
| 21. | Celso Esmalino | Crispina Esmalino | 5 |

LOMA, BIÑAN

| | | | |
|---|---|---|---|
| 1. | Renato Lopez | Solidad Disalit | 51 |
| 2. | Enrico Cabrera | Lydia Dicdican | 52 |
| 3. | Rodolfo Borja | Dominina Garcia | 54 |
| 4. | Teofilo Mercader | Crispina Dicdican | 55 |
| 5. | Protacio Samson | Avelina Bautista | 56 |
| 6. | Arsenio Samson | Esperanza Milan | 58 |
| 7. | Pascual Milan | Magdalena Odon | 59 |
| 8. | Alejandro Belisina | Alejandra Belisina | 60 |
| 9. | Pronio Cabrera | Pilar Bautista | 62 |
| 10. | Primo Maranan | Leticia Hordan | 66 |

*Newly assigned ID number

FHDO's

| | | | |
|---|---|---|---|
| 11. | Segundino Hordan | Gorgonia Mercader | 28 |
| 12. | Cornelio Carizo | Mercedes Borja | 53 |
| 13. | Salvador Udon | Maricisa Tamayo | 10 |
| 14. | Albino Maliba | Leonila Malaiba | 32 |
| 15. | Domingo Dicdican | Aurelia Liwanag | 38 |
| 16. | Simplicio Gonzales | Conchita Donanella | 3 |
| 17. | Juan Lumasin | Henerosa Malaiba | 9 |

LANKIWA, BIÑAN

| | | | |
|---|---|---|---|
| 1. | Santiago Montañez | Lilia Himenez | 601 |
| 2. | Marciano Belen | Juliana Belen | 27 |
| 3. | Lorenzo Bautista | Flordeliza Bautista | 28 |
| 4. | Domingo Manabat | Cecilia Manabat | 31 |
| 5. | Francisco Castro | Eliotera Castro | 32 |
| 6. | Nicomedes Casunuran | Isidra Casunuran | 34 |
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