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"DISTRIBUTION OF MODERN CONTRACEPTIVE USE IN A MEDIUM INCOME RURAL POPULATION IN NIGERIA, IN THE ABSENCE OF AN ADEQUATE HEALTH CARE DELIVERY SYSTEM: A PRELIMINARY DETERMINATION OF RELATIONSHIPS BETWEEN MODERN CONTRACEPTIVE USE AND LEVELS OF NUTRITION, CHILD MORTALITY, AND FERTILITY".

Final Report prepared for the U.S. Agency for International Development, Grant AID-DSPE-G-0008, Research Program by Boston University and the University of Ife, February 1979 to February 1981.

This report represents analysis of data pertaining to the central Child Survival Hypothesis variables. The study was conducted in 35 village and town sample sites in rural southwestern Nigeria. The report has been read and endorsed by my colleagues who also were principals in this research, Drs. Michael Akin Bankole and Festus Adebonojo who were Project Directors; Dr. Lawrence Adeokun who was Field Director; and Drs. John R. Harris, Ade Adeniyi-Jones, and Joe D. Wray who were special consultants.

I would also like to thank Drs. J. O. Abayomi and E. O. Ojofeitimi, who trained and directed the Nutritional Assessment Team.

Without all of the above, the project would not have been carried forward and brought to a successful completion. I would also like to give special thanks to Drs. Akinsola Akiwowo and Femi Morakinyo, who with Drs. Harris and Adebonojo helped to formulate the major research conclusions; to Messrs. John Houlihan and Lee De Cola for statistical and computer programming assistance; to Ms. Jean Joseph who typed the Proposal, Final Report, and other documents in order to make impossible deadlines; and to Sister Ademiluyi and Mr. Musa Jinadu for continuing assistance during the project.

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REPORT OUTLINE

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I. SUMMARY OF THE FINDINGS

(A) The purpose of the study was to examine relationships between contraceptive use and levels of child nutrition, child survival, and family fertility in this predominantly rural area of southwestern Nigeria; and to make a test of the child survival hypothesis which asserts that where child mortality levels are high, parents try to have added "insurance children" in the hope that some will survive to be adults, whereas when child mortality falls, family fertility also falls (see Section 3a, 3b).

(B) The quality of the data obtained appears to be good, with the exception of the critical variable infant and child mortality which appears to have been under-reported and perhaps greatly under-reported (see Sections 2,4b,6).

(C) The research area, comprising Ife and Ilesa Divisions of Oyo State with an estimated population of about one million persons, was selected because the demographic characteristics of rural communities of this type have been little studied in Nigeria, and because we believed this population to be relatively homogeneous with respect to many of the socio-economic factors which are thought to affect demographic behavior (for example ethnicity, social structure, socio-economic status, access to medical facilities). This proved to be the case, 98% of the sample population belonging to one ethnic group (Yoruba) and about 75% of the population being engaged in farming or farm-support activities (see Sections 3c, 4f, Tables 7-10).

(D) Following on the above, all persons in our study area live in specific named communities including "villages" ranging in size from about 150 to about 40,000 persons, and two towns, Ife and Ilesa, with populations estimated to be 148,000 and 188,000 (in other words, there are no isolated rural homesteads). Population characteristics and response patterns to

questions show more similarities than differences when controls for size of community are introduced, and we have placed less emphasis on this variable in analyzing the data. As one example, the important socio-economic and demographic variable, number of wives per husband in this polygynous society, shows little variation in mean (1.4 wives per husband, range 1.0 to 1.8) in relation to size of community (the two extreme being villages), and other socio-economic variables follow a similar pattern (see Section 3c).

(E) Given the problems of under-reported infant and child mortality, it is clear nevertheless that the child survival hypothesis is not supported in the data; but rather several opposite trends appear which complicate consideration of the child survival hypothesis at this time in this part of Nigeria. Most importantly, the fertility levels of families in the sample are lowest in categories showing closest continuing attachment to traditional life ways, and rise with each category of contact with the forces of modernization, including levels of education, categories of occupation, degrees of social status variously measured, membership in particular social groupings. The rise in fertility is found in a step-by-step progression in the above-stated direction, virtually without deviation throughout the entire body of the data. To the extent that one can impute lessened or at least unchanged levels of infant and child mortality with improvements in education and social status, then, one must also surmise a negative relationship between mortality and fertility levels, and reject the hypothesis (see Sections 5-7).

(F) Following on the above, one sees fertility levels in this sample which are considerably higher than those reported for Ife Town thirteen years ago by Olusanya. In a study of 2,200 married women made in 1966, Olusanya reported an age-corrected mean fertility of 3.12 compared with a mean of 3.52 for our present sample in Ife and Ilesa Divisions. To the extent that the two studies are comparable, one then sees an increase of 0.4 children per

mother for the "half life" of her child-bearing period, or an estimated increase of 0.8 children for her child-bearing period. Again presuming a decreased or at least unchanged infant and child mortality pattern for this 13-year interval, then one must assume a negative relationship between fertility and mortality during these years and a rejection of the hypothesis (see Sections 5-7).

(G) Speculation about infant and child mortality levels (see Section 6) and about means for improved mortality research (see Section 7b) are made in this report. Two recent international population conferences in West Africa concluded that mortality data for the continent as a whole remain a "terra incognita", and that new research approaches are urgently needed. The reader is doubtless familiar with the socio-cultural problems involved in mortality research of any kind in this part of Africa (again see Section 6).

(H) With respect to contraceptive use, 13.8% of husbands in the sample reported that they or their wives had used some form of modern contraception (we predicted 15% in the proposal to AID). Husbands reported higher levels of contraceptive use than did their wives, and in general husbands seemed to give more complete information about this and other related subjects than did their wives, possibly a reflection of wives' deference to husbands in this rural culture. Very low levels of use were given for any one particular method, husbands reporting use by themselves and/or their wives are as follows: condom (4%); IUD, pill, depo (2% each); diaphragm, foam (1.5% each); withdrawal (9%); safe period (7%). Wives gave much lower figures: pill, depo (1% each); IUD, condum (0.5% each); diaphragm, foam (less than 0.25% each); withdrawal, safe period (3% each). (See Appendix C and summarizing Table 5).

(I) Of the husbands, 39.9% reported use of traditional post-partum abstinence and 9.7% reported use of traditional spermicides and charms, by themselves or their wives. Wives reported lower figures (see Appendix C).

(J) An unanticipated finding is that 24.5% of husbands reported the use of various permitted social mechanisms by their wives for the purpose of avoiding pregnancy (again, wives reported a lower figure). These include:

(a) leaving their homes to stay at their mothers' home for periods of time after a child-birth, and staying for what both husbands and wives described as the unusually long period of three to four years, and

(b) prolonging breastfeeding of the new infant for an unusually long period, again three to four years, during which time intercourse and a new pregnancy is forbidden by custom;

in both of the above it should be repeated that the practice was described as for the puspose of avoiding pregnancy. Nigerian colleagues involved in this project have interpreted this finding as evidence that rural families are seeking new methods of child-spacing and would welcome further information about modern contraception (see Sections 6, 7a).

(K) A further unanticipated finding is that a larger than expected number of respondents were unfamiliar with modern contraceptive techniques and were unaware that family planning services exist in their area. As noted previously, these findings are not confined to smaller villages but rather are spread throughout the sample, including the town sites in Ife and Ilesa. One might surmise that twenty years ago family planning publicity in this area was more pervasive than it is today, and that a new effort in this direction might bring new acceptors. Again, this has been the interpretation of the data made by Nigerian colleagues in the project (see Sections 6, 7a).

(L) It is clear that almost every family in the research area views child survival chances as improved over the time of their parents and grandparents. A carefully constructed "Perceived Child Survival Chances" scale was able to discrimate on only one or two items for most families. Greater optimism was somewhat correlated with higher fertility and lesser practice of family planning at a level of about 0.2 for most age groups, a finding which matches with the rising fertility pattern (see Section 4c, Tables 3,4,11).

(M) In response to a series of open-ended questions, most respondents attributed improved child survival chances to better modern medical facilities (about 75% of husbands and wives gave this reason) and improved medicine (about 90% gave this reason). Yet actual use of these facilities is low for most of the sites surveyed, irrespective of the distances involved. About 70% of children had never been taken for any immunization, probably the best index of non-use of maternal and child care facilities (see Section 4c, Tables 9,10)

(N) Anthropometric measures of small children in the sample including weight and height profiles have been obtained with a high degree of accuracy, as nearly as we can determine from the research experience and the data patterns in comparison with other samples reported in the literature. Weight-for-age profiles have been developed in comparison with those by David Morley in this same area of Nigeria twenty years age, and age-independent weight-for-height profiles have also been developed. On the basis of these profiles, nutritional status of the children has been scored. It would be nice to report strong correlations between nutritional status of children and other important variables such as fertility or family planning, but in fact, correlations are slight for all age groups. The nutritional patterns themselves show expected normal curve distributions when plotted; when correlated

against fertility or family planning indices, some of the plots show the almost classic circular pattern indicating non-relationship (see Section 2).*

(O) The apparent relationship between increasing modernization and increasing fertility has been reported in other surveys in Nigeria and elsewhere in the developing world. One explanation offered is that mothers wean children earlier and have babies more often, the impact of education and urbanization having the effect of introducing young women to bottle-feeding and other influences which result in reduced breastfeeding. Our data do not give particularly strong support to this interpretation, the median interval between pregnancies in our sample being approximately three years up to the seventh pregnancy, declining for some reason to about two years for pregnancies after that, up to the 12th pregnancy (only a few women had this many pregnancies), the three-year interval being approximately the same as that reported by anthropologists in earlier times for this part of Africa. The median period for breastfeeding is 18 months in the sample, less than the two or three years reported in the literature fifty years ago, but about the same as that reported by Morley and others for this part of Africa twenty years ago. The decline in breastfeeding if it has actually happened does not appear to have affected pregnancy intervals. Median age of marriage for women in the sample is 20 years, considerably older than previously reported for this area (see Section 6).

(P) A better explanation may be as follows: Demographers interviewing mothers to obtain birth and child death histories think they are getting data on total surviving children (s), total children who have died (m), and total live births (t), so that the equation summarizing their data reads:

$$t = s + m$$

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*Also see Figures 1-5 and Table 11.

What they are actually getting, however, is total surviving children (s) plus whatever number of children the mother is prepared to report as having died ("m"). In our sample, 80% of mothers interviewed reported zero child deaths, another 8% reported one child death, and so on, clearly far lower than all other available evidence would suggest, including medical records, case histories from key informants, and so on. The equation summarizing the data then becomes:

$$"t" = s + "m"$$

According to this formulation, the variable (s) is the only one in which the research demographer can place particular confidence; the other variables (t, "t", m, "m") can vary and in fact could vary greatly. The author of this report tends to doubt that true (t) varies very much in this traditional society; what we are probably seeing in Nigeria and possibly in Kenya and other developing areas as well, is an ancient society which suddenly is experiencing declines in infant and child mortality. These declines are not immediately recognized by parents and in any event are not reported (apart from the above-mentioned statements by respondents that child survival chances are improved in this part of Nigeria over the situation in their parents' or grandparents' time). The result is a rise in ("t") with each rise in exposure to modern influences such as educational and social status level, perhaps accompanied by a rise in true (t) but probably not; and with the demographic community in the developing world reporting disquieting rises in actual fertility (see Sections 5-7, and especially Section 6).

(Q) On the basis of these propositions, the writer has put forward a model to interpret the reported rise in (s) and ("t") which is as follows:

--Almost all family planning KAP studies in West Africa have reported ideal family size levels of about six children for all categories of respondents, the sole exception being some declines with the most educated or higher trained professional groups.

--These studies also report "t" levels of less than six (i.e., a mother may have more live births than six, but the average numbers of surviving children are in the range of closer to five children, less than the ideal six).

--With exposure to modernization in its various forms, true (m) falls so that (s) and ("t") rise.

--When (s) surpasses six and continues to surpass six for a time long enough to impress parents, both ("t") and (t) should begin to fall.

Support for this latter proposition is found in the data of the previous Lagos study by this writer, and a small degree of support is found in the current Ife data. In other words, for the highest socio-economic groups, declines in (s) and ("t") can be observed, suggesting that there may also be the beginning of a decline in true (t). (See Section 6).

(R) Policy Recommendations Summarized:

1. The majority of families in the study area clearly perceive improved child survival chances in their society; have a mean of about seven surviving children in their families, which is above the stated ideal of six; and are ignorant not only of the existence of family planning services in their area, but also of the principles of family planning itself. In the circumstances, it would seem warranted to attempt a trial family planning intervention program, including extension workers and formal publicity. Support for the program would be support for the child survival hypothesis (see Section 7a).

2) The data from Ife and other surveys in Nigeria suggest that the pattern of relationship between fertility and modernization may be curvilinear, so that fertility first rises and then falls in response to the introduction of modernizing influences in the society. If such a pattern is correct, this would account for the fact that the child survival hypothesis is sometimes supported and at other times rejected, on the basis of research in developing countries (see Section 7a).

3) Differences have been suggested between the research variables identified as (t, "t", s, m, and "m"), representing true total live births, mis-reported total live births, true surviving children, true child mortality, and mis-reported child mortality. It is important from the point of view of better research and a better understanding of the fertility picture in developing countries that more emphasis be placed on obtaining more accurate data. Some recommendations are made in this report, for example, that fathers give better data than mothers, that parents in low income areas have a better record of births and child deaths than many demographers suppose. The most important recommendation made is that contact through time with a smaller number of families would perhaps give better data than large-scale surveys conducted on a one-time or single visit basis (see Section 7b).

II. DISCUSSION OF THE QUALITY OF THE DATA OBTAINED

The survey was conducted in a sample drawn from the entire population of Ife and Ilesa Divisions, including two towns with populations of over 100,000 persons and 849 villages with populations ranging from less than 100 persons to close to 40,000. All persons live in a defined and named community in this

predominantly rural area of Nigeria, and most persons are employed in agriculture or in agriculturally related occupations such as marketing. This pattern is found in the larger towns as well as in the smaller villages, the largest urban area in the region, Ibadan, with a population of more than one million persons, being widely described by residents and in the literature as "a farm town grown to very large size." Farmers traditionally live in one of these communities and commute to their outlying lands, in the old days and to a large extent today by walking. For these reasons, the sample was drawn from the entire population pool rather than from the villages alone. A master list of the 851 known communities in the two divisions together with estimated populations was prepared, from which 40 clusters of about 40 families each were drawn by systematic random method. Seven of these sites had to be dropped without replacement during conduct of the research, for reasons described in previous reports, the final sample consisting of 11 town sites and 22 village sites (see Table I).

On the basis of distribution of responses and apparent consistency, most of the data appear to be good. Unlike the previous Lagos survey in which every field worker was visited every day, it was necessary in these widely dispersed sites to give each field worker a considerable degree of personal responsibility, with only occasional checks by senior staff. The fact that large segments of the data show a consistent pattern suggests that both interviewers and respondents were doing their jobs adequately.

As a simple example, an interviewer questioning a woman respondent can ask a question such as, "How old are you?" and receive a reply which is recorded. The interviewer can ask, "How many children have you had?" and receive a reply which is recorded. There is no necessary reason why these two numbers should be related or should be accurate; and yet the distribution of

TABLE I

Population Distribution and Distribution of Respondents in Nigeria Survey

Population Range, Settlements in Ife, Ilesa Divisions, Oyo State	Number of Settlements	Estimated Population	% of Total Population	Number of Sample Locations	Population Range of Locations Selected in Random Sample*	No. of Women Interviewed	No. of Husbands Interviewed	Ratio Wives Per Husband	Respondents as % of Total Sample
Over 100,000	2	336,000	35.2	11	148,000-188,000 (Ife & Ilesa Towns)	356	215	1.66:1	41.1
50,001-100,000	0	-	-	0	-	0	-	-	-
10,001-50,000	9	165,825	17.4	7	11,492- 39,899	183	125	1.46:1	21.1
3,001-10,000	20	113,350	11.9	6	4,150- 5,396	171	122	1.40:1	19.7
Less than 3,000	820	339,825	35.6	9	155- 2,160	156	126	1.24:1	18.0
TOTALS	851	955,000	100.1	33	-	866	588	1.47:1	99.9

*Initially there were 14 town sites and 26 villages sites sampled, three town and four village locations being dropped during the project (see text). Each location was chosen randomly based on population distribution in the two divisions of Oyo State, and 40 dwelling units were selected by further random process at each location. Field workers were instructed to interview 30 women of child-bearing age from each of these clusters, plus their husbands. Initially, 12 clusters were sampled in the smallest village category to give an initial sample target of 360 women, rather than the 156 actually interviewed. This category of settlements is therefore under-represented vis-a-vis the other three categories (again see text).

ages and reported births shows a consistent pattern as do other data, and suggest that these events were being recorded with a satisfactory level of accuracy.

Data on heights, weights, and other anthropometric measurements of small children in the sample were obtained, all measurements being taken by a team of four specially trained for this job. Much of this material remains to be analyzed, but we have developed weight-for-age profiles and weight-for height profiles in order to make determinations of the nutritional status of the children. The weight-for-age profiles have been matched against the well-known standards developed by Morley in this area of Nigeria, about 20 years ago, when some 400 children were followed for five years. These children were under the care of a pilot clinic in one of the villages in the area, Imesi-Ile, and so their weight patterns might be expected to be somewhat higher than in the case of our own sample children, some 70% of whom were not under any formal medical care program. In fact, our data show a normally distributed pattern similar to Morley's, with a similar range of weights in various age groups but with somewhat lower median weights. Because ages are difficult to determine accurately, we also scored weights against heights according to the Rao and Singh formula (weight/height^2 X 100). Our mean of 0.154 for all children was only slightly different from the Rao and Singh mean of 0.150, based on measurements of about 3,000 Indian children, although our standard deviation was somewhat higher. The similarities in these data sets suggest that our data were in general competently gathered and can be relied upon.

The principal shortcoming in the research was a failure to obtain good data on infant and child deaths. Parents in this part of Africa, traditionally have considered it bad luck to discuss these matters, for fear of inviting witchcraft. Parents are also thought by many demographers to forget

child deaths, which are believed to be frequent occurrences in this rural society. Our experience in the Ife-Ilesa survey has been that after sufficient re-visits, rapport may be obtained with the fathers to the point where better data about child deaths may be obtained. We found in some villages that fathers had small and tattered diaries kept by some literate person, perhaps the local teacher, and that precise dates were kept of each birth and child death in the family, together with some information on causes of death. Unfortunately, ours turned out to be a retrospective study and such re-visits were too limited to have a large impact on the data. Over 80% of parents reported no child deaths, a figure seemingly much lower than one would expect from other data sources, for example, medical records or case histories provided by key informants.

In general, data from husbands appears to be more complete than from wives, and relatively few variations are found as between larger towns and smaller villages. Villages in the size range 10,000 to 40,000 person, in fact, rank higher on social status scales variously measured than do the town sites in Ife or Ilesa or the smaller villages, reflecting our own impressions to some extent. Villages in this size range have electricity and householders seemed to have more electrical gadgets and other forms of property then some of their more urban neighbors, perhaps reflecting equal access to agricultural produce and lower rents in these middle-sized communities.

The smallest villages are considerably under-represented in the final sample (see Table I) because several had to be dropped for reasons reviewed in earlier reports, and the somewhat curtailed project timetable did not permit replacement. In view of the apparent similarity in population characteristics found in the sample as between one site and another, we are less concerned about this loss and have not made special provision to compensate for this loss in the data analysis.

If the project were to be done again, we would recommend fewer sites and a longer project timetable, so that contact with field workers could be better maintained and additional revisits to families in the research sites could be made in the expectation of obtaining improved data on the critical variable of infant and child deaths.

III. THE RESEARCH DESIGN

(A) The Child Survival Hypothesis

The project title is "distribution of modern contraceptive use in a medium income rural population in Nigeria, in the absence of an adequate health care delivery system: a preliminary determination of relationships between modern contraceptive use and levels of nutrition, child mortality, and fertility."

A copy of the Proposal is attached as Appendix A. The major hypothesis (Proposal, Page 11) asserts that a set of relationships should exist between the major variables, children's current nutritional levels in the study population and histories of child survival and mortality, child-spacing practice and fertility in the study families. It is recognized that the theoretical basis exists for imputing relationships and possible causality between any two of these variables in either direction; nevertheless, for analytical purposes the variables were ordered in the form of a classic hypothetical statement as follows:

(1) That better nutritional status of children aged 0-4 years as measured via weight-for-age profiles (independent variable);

(2) Is positively associated (a) with lower recent histories of infant and child mortality in the families as reported by parents and (b) with improved perceived child survival chances as reported by parents (first order dependent variables);

(3) With (a) more positive attitudes toward modern contraceptive use and (b) with greater levels of contraceptive use, as reported by parents (second order dependent variables); and

(4) With lower fertility histories in the study families (third order dependent variable).

The theoretical rationale for predicting this set of relationships is known in the population science literature as "the Child Survival Hypothesis," and may be stated as follows: that in low income societies characterized by high birth rates, high death rates, and high infant and child mortality rates, and in which families place a high social and cultural value on children, those families who experience lower levels of infant and child mortality and who perceive these levels to be lower, will be more disposed to practice child-spacing and to plan smaller families; whereas, parents who experience higher levels of infant and child mortality will seek larger families so as to produce "insurance children", i.e., so as to produce many children in the expectation that at least some will survive to be adults. The literature relating to the Child Survival Hypothesis is reviewed in the Proposal (pp. 14-23).

Our analytical framework goes beyond the usual Child Survival Hypothesis framework in four respects:

(1) We take child's nutritional status to be an index of child's current health status and survival potential, a position widely accepted by pediatric researchers in low income countries (see, for example, the classic statements of Morley, 1973; King et al., 1972; Williams and Jelliffe, 1972, Bryant, 1969; King, 1966).

(2) We take simple anthropometric measurements to be a satisfactory index of child'e nutritional status (Anderson, 1979; Waterlow et al., 1977; McLaren and Read, 1972; Waterlow, 1972).

(3) We are making the assumption that child-rearing patterns have a certain continuity in specific families, so that the current nutrition and health status of existing children reflects the nutrition and health status of previous young children in the family and is related to the history of child survival and mortality in the family (this assumption being made on the grounds that formal mother and child care facilities and formal health education measures are little known in this society, and that child care patterns continue with little change from year to year. Our data, for example, show that 70% of parents have never had any immunization given to any child, probably the best measure of non-contact with formal MCH facilities).

(4) Because the nutritional status of children varies markedly from house to house, and sometimes from mother to mother within the same house (many pediatricians in different parts of Africa have remarked on this), for reasons generally not known but which in any event would seem to be little related to the other major variables in this study, we have selected variations in nutritional status as the independent variable and seek to relate other analytical variables to this one.

(B) Modification in the Parameters Measured

The hypothesis was altered at several points as a result of field experience and alterations in the project timetable. These changes are reviewed more extensively in the appropriate sections of this report, but can be summarized briefly as follows:

(1) It became apparent that children's ages could not be determined on the basis of one-time interviews with parents. We felt we got much better information on age and many other subjects during each follow-up visit to homes, and in fact, one of the motivations for our continuing petitions to donors during the life of the project to convert from a retrospective to a prospective study was the realization that better and better quality data were obtained with each re-visit. Given the circumstances of a retrospective study, we have instead given more emphasis to the age-independent weight-for-height profiles of children and particularly to the Rao and Singh formulation (1970), in making our nutritional assessments.

(2) Although our study showed that about 14% of respondents had practiced some form of modern contraception (we had predicted 15% prior to the study), the data also revealed much more extensive lack of knowledge about family planning and the concept of child spacing than we had anticipated. We had thought that a larger number of respondents would have known about contraception, though stating that they had never used it. We did find, however, that many women did engage in permitted social practices which allowed them to avoid pregnancy. For

example, a woman in this society is allowed to go home to mother for periods of time and we found respondents who had done this for up to four years "so that I wouldn't have another baby." In our analysis we have therefore scored respondents as practicing modern contraception, as practicing several forms of traditional contraception, as practicing this just mentioned "social contraception", and as practicing any form of pregnancy avoidance whether modern, traditional, or social.

(3) A third modification made early in the project was that the proposal originally called for the sampling of contracepting and non-contracepting women in equal numbers, whereas this idea proved to be entirely impracticable in pilot surveys and had to be dropped. In order to identify contracepting women, it was necessary to introduce a set of filter questions at the beginning of each interview, which focused on one of the more sensitive issues we wished to explore in the research. Rather than risk rapport problems, we decided to draw a simple unstratified sample of women from each cluster (this decision is reviewed in one of the earlier reports).

(C) The Study Population

The sample population was drawn from a list of 851 communities in Ife and Ilesa Divisions, drawn up together with estimated population sizes, from which 40 clusters were selected by random systematic method so that each person would have an approximately equal chance of selection regardless of size of community of residence. Fourteen of these clusters fell within the two towns of Ife and Ilesa, and 26 in villages ranging in size from Aroke (155 persons) to Ipetu-Ijesa (39,899), two of the sampling clusters falling in the

latter "village" because of its large size. When the 40 clusters were drawn, what in effect was established was a location point in each of the chosen sites, and around this point we identified more or less arbitrarily a cluster of about 40 families and prepared maps showing the location of these households. The young field workers assigned to each cluster had as one of their first jobs, in fact, meeting the chiefs and elders in each site and mapping their sample sites.

The field workers were instructed to complete a household enumeration form for each family, with the assistance of the head of household, and to interview any 30 women of childbearing age in the cluster together with their husbands. Children aged 0-4 (i.e., up to the fifth birthday) of each respondent were to have anthropometric measurements made by the separate nutritional assessment team. Because the field workers were on their own much of the time, and far from home so to speak, we felt that it was preferable to have clusters containing more than the required 30 woman respondents so that at least 30 would be available for interviewing, even though to this extent the power of the random sample was reduced.

The sample thus planned would contain 1,200 women plus their husbands and children. As noted previously in this report and in prior interim reports to AID, seven of the 40 sites had to be dropped without replacement. The reasons for dropping the sites were various, three villages, for example, being centers of political tension during and after the Nigerian election campaigns when the field work was beginning, and so forth. Had the project become a prospective one as we for a time supposed, then replacement sites could easily have been introduced; when the decision was made not only that the project should be retrospective but that it must also end slightly ahead of schedule, then clearly we had no choice but to complete the field work

in the 33 remaining sites only. The target sample thus became 990 women and their husbands and children; in coding after the field work, a number of forms were rejected so that our final sample comprises 866 women, 588 husbands (many of the interviewed women having the same husband in this polygynous society, and about 50 women having no husband present during the field work), living in a total of 577 households (some husbands being brothers or otherwise related in these extended families and living with their wives in a single household). While the losses of the several sites and a number of respondents from the sample is not a good thing from the research methodology point of view, there is no indication in the data that serious damage has been done to the sample, all of the sites both village and town having a high degree of homogeneity. Controls for size of sample community have been introduced where appropriate in the data analysis.

A surprise during the conduct of the field work was the small number of children aged 0-4. Based on experience in the previous Lagos survey we expected an average of about 1.5 children per mother in this age bracket; in fact, we found only about 0.8 reported children in this age group for each mother, of whom 0.6 were present at home, and 0.2 had been fostered out, usually to other relatives as is a custom with rural families. With attrition due to the logistics of getting the weighing team, the mothers, and the children together at the right place at the right time in 33 different locations, we succeeded in weighing and measuring 408 children representing a mean of 0.47 children per mother and a loss of about 100 children living at home and another 175 who had been fostered out.

This is a reasonable record considering the available children, but a question remains as to whether rural mothers actually have lower fertility to this extent in comparison with urban mothers, whether a greater number of

children had been fostered out and not reported, or what. Another possible interpretation would be that infant mortality is higher to this extent in rural areas, the added children in the Lagos families representing added surviving children. Further research with the Lagos and Ife data will be undertaken in an effort to develop hypothetical infant mortality models and to further examine this question.

The field workers were young men and women, with completed or semi-completed secondary educations and usually also with some prior work experience in jobs dealing with the public such as teaching, tending market stalls, or similar. They were intended to have two months' training, but in fact had four, political tensions growing during the Nigerian campaign and subsequent elections causing us to bring the young field workers into the vicinity of Ife for this period so they could be accounted for, and the time being used for further training and pre-tests. As it happened, the elections went off quietly, although there was no way of predicting this in advance, and the added experience probably led to better work in the field. As pointed out in earlier reports, the interviewers were able to establish good rapport with community leaders and respondents in most of the research sites, usually being given free accommodation by village chiefs, teachers, or other senior persons; in a few cases it was necessary for them to rent rooms.

The sample as drawn appears to be reasonably well representative of the overall area (see Table I), with the exception of the smaller places in the under-2,500 population range (we had sampled 12 of these places but only nine remained in the final sample after attrition). About 35% of the overall population of the region lives in these small places, many of which do not have electricity and are not accessible by road, and we were on the lookout for differences in the population characteristics of these little villages. Up

to this point, the only consistent difference that has appeared with respect to location size is degree of social status according to various measures, which rises as one proceeds from the smaller villages up to a high in the largest "villages" (i.e., those in the 10-50,000 population range) and then falls again in the towns (Ife and Ilesa). Our fertility variable, which we have related to social status in one of our principal analytical findings, also follows this pattern and is highest in the largest "villages", falling again in the towns. Our impression during field work was that residents of these larger villages are indeed relatively well off and possibly better off than persons in the crowded and expensive large towns, but one prefers to make a more extensive examination of the data before making any more positive statement about this unanticipated result. In general, it appears on the basis of data analysis up to this point that population characteristics in different sized locations in the sample are relatively homogeneous.*

IV. DISCUSSION OF DATA PERTAINING TO THE MAJOR VARIABLES

Different segments of the research interviews were designed to collect information relating to the different major variables, and considerable time was spent in examining data for the given variables independently and in identifying what appeared to be the best measures of each or in designing summarizing scales. No cross-tabulations or other comparative measures were made until these major variable measurements had been defined.

(A) Nutritional Status of Children

In addition to age and sex of each child, the following measurements were obtained: weight in kilograms; length or standing height in centimeters; upper mid-arm circumference, head circumference, chest circumference in centimeters;

*In an earlier report it was suggested that differences existed, based on hand-tabulated calculations in the field in a view sites. When all 33 sites are entered into the calculations, most of these differences disappear.

triceps skinfold thickness in millimeters. All measurements were made by one team of four persons trained by the Faculty of Health Sciences, and all skinfold measurements and most of the other measurements were made by one member of the team, while others assisted in managing children and in crowd control. One member of the team recorded the results called out by the measurer at most of the locations, so that a degree of uniformity was attained in the data collection.

Two relationships commonly cited in the literature have been examined to develop indices of the nutritional status of the children; weight-for-age measurements matched against standards developed by Morley and others in this area of Nigeria (Morley, 1968), and weight-for-height measurements following a formula developed by Rao and Singh in an examination of 3,000 children in India (Rao and Singh, 1970).

Because of problems in measuring the ages of children, greatest reliance has been placed on the weight-for-height index. Rao and Singh report a mean of 0.15 for each age group measured and a high correlation between this index and scores for special groups of child patients rated in different nutritional categories on the basis of laboratory tests, the majority of children diagnosed as having kwashiorkor or marasmus scoring 0.14 or below irrespective of age. The index is based on the formula WEIGHT/HEIGHT-SQUARED x 100, developed by Rao and Singh on the basis of regression tests to establish an age-independent relationship between weight and height.

Of the mothers in our sample having had children weighed and measured, 190 had one child in the 0-4 age group, 100 had two children, and nine had three children. Mothers were scored on the basis of the nutritional index of the smallest child, and on the average of her children whether one, two,

or three. These two indices were compared with number of children reported born alive and number of children reported to have died, for mothers in three age groups (16-27, 28-37, and 38-52). Scattergrams show the distribution of children to show a normal curve in almost every category, and Scattergrams and correlation tests show almost no correlation in every category, as between children's nutritional statuses and levels of fertility or past history of child mortality (see Figures 1-2 for all mothers, breakdowns by age of mother showing little variation). Figure 3 showing the Scattergram for children born against the index for mothers age 28-37 is included because it displays almost the classic circular pattern of no correlation! While the nutritional indices are of interest to pediatricians as a current set of standards for this region, we must reject the hypothesis that current nutritional status bears a relation histories of past infant mortality or survival in the family, or to the mother's fertility history.

Weight-for-age profiles show similar patterns including normal distribution and lack of correlation with fertility or previous history of child mortality. Because of persistent doubts on the part of the research staff that we were obtaining accurate child ages, we have placed less emphasis on this index. Our children were coded according to their position in comparison with weight-for-age percentiles published by Morley and others as the result of following 400 children for five years during research about 20 years ago in one of our sample sites (Imesi-Ile) where the Wesley Guild Mission ran a pilot maternal and child clinc. Using the same age breakdown as Morley, we scored out children in three categories:

(a) below Morley's 25th percentile,

(b) between his 50th and 75th percentile, and

(c) above his 75th percentile, scattergrams of these results matched against reported child deaths and

reported births for mothers in our sample appearing in Figures 4-5.

Principal rationale for the percentile breakdown is that our Lagos children were similarly scored and we intend in subsequent data runs to compare children in the two data sets. The writer is indebted to Dr. Ayodele Ajayi of the University of Ilorin Faculty of Medicine (who is presently in Boston) for long hours of labor in making these percentile conversions and entering the data onto the B.U. computer, and for other assistance in this data analysis.

A word should be said about the recording of ages, not only of children but of their parents. It has long been stated by demographic methodologists that a means for obtaining more accurate ages is the preparation of a list of chronological events which can be read to mothers and fathers, so that they can compare their own births or marriage dates or the birth dates of their children to these events and thus better estimate the year of the event. In this project, the Principal Investigator kept an accurate log of dates field workers spent in various villages, dates which, in fact, closely correlated with some very memorable events in Nigeria's history: the election campaigns, the five elections, the historic Supreme Court decision naming Alhaji Shehu Shagari as President, the Inaugural in Lagos, the removal and deportation of one of the newly-elected state officials, the official's court appeal and subsequent return to Nigeria, various budget and other Presidential addresses, and many other events closely followed by the entire research staff in this project. Following the field work, the interviewers were queried as to which months they had spent in which willage. Most of them could not remember within a factor of several months despite this list of chronological events, one group which had made a special trip

to one village just after the Inaugural unanimously stating that they had been to the village two months earlier. So much for chronological lists!

The other anthropometric measures of the children in the sample will be scored in subsequent data runs and all of these measures should prove to be of interest to pediatricians. Skinfold thickness, sometimes thought to be potentially the best direct index of nutritional status if accurately measured, has not been examined as yet, in part because recognized standards are lacking and in part because the literature indicates a low level of discrimination based on this index. A subsequent report on these indices will be made.

(B) Child Survival and Mortality

A comprehensive marriage, pregnancy, birth, and child death history was taken from each mother (see interview forms, Appendix B). Our impression is that mothers had no reluctance about discussing the first three items and that these data are good; that the fourth item has been virtually unreported, despite strenous probing mechanisms.

Simple frequencies are: mothers reporting zero child deaths at any time in the past, 656 (78.9%); one child death, 65 (7.8%); two deaths, 54 (6.5%); three deaths, 23 (2.8%); four deaths, 6 (0.7%); five deaths, 4 (0.5%); six deaths, 5 (0.6%); seven deaths, 3 (0.4%); eight deaths, 1 (0.12%); nine deaths, 2 (0.2%); with five other women reporting 10, 13, 21, 23, and 30 deaths respectively and 42 who refused to report (total 866 women).*

The age-adjusted mean of 0.51 deaths per woman compares with a similar mean of 1.04 for the metropolitan Lagos sample. In the prior Lagos research, the study was prospective over 12 months and the Oba, chiefs and people informed us that we had good rapport and were getting good data,

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*In subsequen data runs, the four women reporting 13-plus deaths were dropped out.

though it is possible that the Lagos date, too were under-reported. In the current Ife-Ilesa project, most of the data were obtained via one-time retrospective interviews and a number of chiefs and elders gave us clear indications that the mothers were not reporting these events. After three, four, or five visits to a village, the men would gather around the field workers and would begin to correct previous information given by their wives. One man named off seven deaths of children not previously reported by his wife, for example. Sometimes one of the men would bring out a ledger recording births and child deaths for several families. In one village, the chief greeted the Principal Investigator on a fourth visit, stated that parents were concerned about the levels of infant mortality in the village, and proceeded to name off 17 deaths of the children of various mothers which we had previously not recorded, while field workers scurried about filling in the missing information on their forms. Unfortunately, these added bits of data came too late to greatly affect the overall data set. Several senior staff members involved in the research reported that eight to ten siblings had died in their own families and the child mortality in this high range was common. Again, one must make the recommendation that in future studies, more time be spent with less people, i.e., that a prospective study be made in a smaller sample.

Summarizing data for births and deaths by age group, for the Ife and Lagos samples, appear in Table 2. In view of the interpretation made elsewhere in this report, the reader may note that the figures for births and deaths are higher in the Lagos sample, but the figures for surviving children are about the same in the two samples (see further comments in Section 6). In the Ife sample, ages have been grouped in order to compensate for clustering or "heaping" around the round-number ages such as 20, 25, and 30. The range

of ages was 16 to 52, seventeen respondents being aged 16-19. Anothe sixteen respondents reported ages of 53 to 90 and we have decided to drop these from the analysis.*

In scoring mortality, we have used:

(1) number of deaths reported;

(2) number of deaths reported, by women in the broad age groups 16-27 years, 28 to 37 years, and 38 to 52 years;

(3) according to the formula $D(i) - D(\bar{a})$, where $D(i)$ = deaths reported by woman (i) and $D(\bar{a})$ = mean deaths by age group (in this case seven age groups, up to 22, 23-27, 28-32, 33-37, 38-42, 43-47, and 48-52, these groupings again made to compensate for heaping at the round numbers); and

(4) in order to adjust for both age and number of live births, by the formula:

$$\text{Mortality Index} = \frac{D(i)}{B(i)} - \frac{D(\bar{a})}{B(\bar{a})}$$

All of these indices were highly correlated with each other, and showed almost no correlation with anything else, possibly due to the large number of "zero" reports.

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*Field workers were instructed to record the age given by the respondent; if the age appeared to be in error they were to question the respondent further, but unless the respondent gave evidence of some different age, the interviewer was to record the age as given. All of the women in the "ages 50 to 90" category appeared to be of child-bearing age and were selected for interviewing because they were caring for young children which they said they had recently borne. We have decided to retain those up to a stated age of 52 and to drop the others from analysis.

The field workers also were instructed to interview any woman within their sample cluster who appeared to be or who said she was of child-bearing age, whether married or unmarried. Only one respondent described herself as unmarried, and so we have dropped this analytical category. Olusanya reported 99% of respondents in the same age group to be married in his sample of 13 years ago, stating: "Marriage in this area is very, very stable."

TABLE 2

Birth and Child Death History Data, Ife-Ilesa and Lagos Metropolitan Area Surveys, Nigeria

IFE-ILESA (RURAL) SAMPLE, 1979-1980								LAGOS METROPOLITAN AREA (URBAN) SAMPLE, 1967-1968							
AGE GROUP	NO. OF WOMEN	BORN		LIVING		DIED		AGE GROUP	NO. OF WOMEN	BORN		LIVING		DIED	
		NO.	MEAN	NO.	MEAN	NO.	MEAN			NO.	MEAN	NO.	MEAN	NO.	MEAN
16-22	60	105	1.75	101	1.69	4	0.07	15-19	42	65	1.55	58	1.38	7	0.17
23-27	148	367	2.48	331	2.24	36	0.25	20-24	103	220	2.14	193	1.87	27	0.26
28-32	180	606	3.37	546	3.03	60	0.33	25-29	125	413	3.30	304	2.43	109	0.87
33-37	122	467	3.83	420	3.44	47	0.39	30-34	111	490	4.41	363	3.27	127	1.14
38-42	158	616	3.90	543	3.44	73	0.47	35-39	89	460	5.17	341	3.83	119	1.34
43-47	78	328	4.21	270	3.46	58	0.75	40-44	50	274	5.48	199	3.98	75	1.50
48-52	60	268	4.47	187	3.11	81	1.36	45+	38	199	5.24	124	3.26	75	1.97
AGE ADJUSTED MEANS	806	2,757	3.43	2,398	2.92	359	0.51	AGE ADJUSTED MEANS	558	2,121	3.90	1,582	2.86	539	1.04

(C) Perceived Child Survival Chances

To measure this variable, a set of nine questions was developed, partly by the Principal Investigator to match the Lagos survey questions, and partly by the Field Director, Dr. Adeokun, in an effort to produce a greater degree of discrimination between respondents. The same questions were asked independently of wives and husbands, and were as follows (translated as nearly as possible to match the Yoruba phraseology):

1. "Do you think children survive nowadays more than when you were young?"

2. "When do you think children survive most? Is it the time of your parents?" (I.e., when parents were children, meaning the time of the grandparents). "Is it your own time?" (Meaning when the respondent was a child, i.e., the parents' time). "Is it nowadays?" (Meaning the present, the time of existing small children).

3. "When is it worst for the survival of children? Is it the time of your parents? Your own time? Nowadays?"

4. "Give the reasons for your answers."

5. "For children, what is the difference between the olden days medicine and the present day medicine?"

6. "For children, what is the difference between present hospital treatment and in the past?"

7. "For children, what of our food, is it better or plenty?"

8. "What is the difference in the present day child care and the past?"

9. "What can you say about the witch and the wizard?"

10. "No matter how we take care of children, some will die. Please tell me how many out of ten children nowadays do you think can be mothers and fathers of their own children?"

The clearest response pattern running through the data for both wives and husbands is the perception of improved child survival over previous times, more than 90% of male and female respondents stating that more children

survive now and fewest survived in the grandparents' time. About 90% also aid food and child care are better now. With respect to medically related questions, it may be of interest that more than 90% said medicine is better now, but only 75% said doctors and hospitals are better.

The only two questions to discriminate somewhat between respondents, of the first nine, were the hospital question with about 25% showing some doubts about hospitals and doctors, and Dr. Adeokun's question about witchcraft which brought some difference between respondents and also some difference between husbands and wives. Of the wives, 43% said witchcraft was less dangerous to children now, while the remainder were for the most part not prepared to discuss this subject; among husbands, 62% said witchcraft was less.

While a Guttman Scale is not necessarily the best format for ordering these items, two computer printouts (Guttman Scales for wives and husbands on simple "now" or "previously" divisions) are given in Tables 3 and 4 because the distribution and ordering of responses is well shown in these printouts. In constructing "Perceived Child Survival Scales" for Wives and Husbands, the items were summed (Wife and Husband could each score 0 to 8) and grouped in three categories (Score 1-6, Score 7, Score 8); a combined Wife-Husband scale based on the average of the two scores and divided into three categories was also constructed. These three scales have been used in making comparative runs with other variables in the analysis (see Section 5).

The tenth question, copied from the Lagos survey in which responses had proved to be enlightening, failed to do much for us in the Ife-Ilesa study. The question is supposed to produce summary scores similar to a kind of percent answer; unfortunately, the majority of both wives and husbands refused to answer the question, and it is possible that the question was asked incorrectly. In any event, it has not been scored.

TABLE 3 -- Guttman Scale, Perceived Child Survival Chances, Women in Ife-Ilesa Sample

```
* * * * * * * * * * G U T T M A N   S C A L E   ( C H L D S U R V )   U S I N G   * * * * *
WOM22        HOW MANY CHILDREN SURVIV?          DIVISION POINT =      1.00
WOM23        WHEN CHILDRN SURVIV MOST?          DIVISION POINT =      1.00
WOM24        WHEN CHILDRN SURVIV LEAST          DIVISION POINT =      1.00
WOM25        MOD HOSPS.DRS MAKE DIFF            DIVISION POINT =      1.00
WOM26        SAYS MEDICINE DIFF NOW             DIVISION POINT =      1.00
WOM27        SAYS CHILD CARE DIFF NOW           DIVISION POINT =      1.00
WOM28        SAYS FOOD DIFF NOW                 DIVISION POINT =      1.00
WOM29        SAYS WITCHCRAFT LESS NOW           DIVISION POINT =      1.00
* * * * * * * * * * * * * * * * * * RESP = 1 FOR VALUES EQUAL TO DIVISION POINT AND ABOVE * * * * * * *
```

ITEM..	WOM29		WOM25		WOM28		WOM27		WOM26		WOM24		WOM23		WOM22		
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	TOTAL
CHLDSURV 8	0	270	0	270	0	279	0	270	0	270	0	270	0	270	0	270	270
7	228	54	38	244	3	279	0	282	2	280	3	279	2	280	6	276	282
6	121	14	80	55	38	97	3	132	1	134	11	124	11	124	5	130	135
5	19	10	16	13	10	19	10	19	4	25	12	17	9	20	7	22	29
4	20	31	9	14	19	4	17	6	16	7	6	17	2	21	3	20	23
3	36	01	29	0	34	1	33	21	33	21	8	27	1	34	2	33	35
2	15	01	14	1	15	0	15	01	15	01	14	1	2	13	0	15	15
1	2	01	2	0	2	0	2	01	2	01	2	01	2	01	0	2	2
0	1	01	1	01	1	0	1	01	1	01	1	01	1	01	1	01	1
SUMS	441	351	189	669	122	679	81	711	74	718	57	735	30	762	24	768	792
PCTS	56	44	24	76	15	85	10	90	9	91	7	93	4	96	3	97	
ERRORS	0	91	38	89	41	24	13	8	23	2	40	1	27	0	23	0	410

855 CASES WERE PROCESSED
73 (OR 8.4 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9183
MINIMUM MARGINAL REPRODUCIBILITY = 0.8535
PERCENT IMPROVEMENT = 0.0518
COEFFICIENT OF SCALABILITY = 0.5662

TABLE 4 -- GUttman Scale, Perceived Child Survival Chances, Husbands in Ife-Ilesa Sample

```
* * * * * * * * * * GUTTMAN SCALE (CHLDSURV) USING * * * * * * *
HUSB22    HOW MANY CHLDRN SURVIV?          DIVISION POINT =    1.00
HUSB23    WHEN CHLDRN SURVIV MOST?         DIVISION POINT =    1.00
HUSB24    WHEN CHLDRN SURVIV LEAST         DIVISION POINT =    1.00
HUSB25    MOD HOSPS.DRS MAKE DIFF          DIVISION POINT =    1.00
HUSB26    SAYS MEDICINE DIFF NOW           DIVISION POINT =    1.00
HUSB27    SAYS CHILD CARE DIFF NOW         DIVISION POINT =    1.00
HUSB28    SAYS FOOD DIFF NOW               DIVISION POINT =    1.00
HUSB29    SAYS WITCHCRAFT LESS NOW         DIVISION POINT =    1.00
* * * * * * * * * * * RESP = 1 FOR VALUES EQUAL TO DIVISION POINT AND ABOVE * * * * * * * *
```

ITEM..	HUSB29		HUSB25		HUSB28		HUSB26		HUSB24		HUSB27		HUSB23		HUSB22		
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	TOTAL
CHLDSURV	ERR		ERR		ERR		ERR		ERR		ERR		ERR		ERR		
8	0	278	0	278	0	278	0	278	0	278	0	276	0	278	0	278	278
7	134	107	76	103	9	232	1	240	9	232	2	239	8	233	0	241	241
6	69	15	47	30	20	63	7	76	7	76	6	77	5	78	6	77	83
5	29	15	20	23	17	26	16	27	16	27	9	34	13	30	10	33	43
4	9	0	7	2	6	3	6	3	2	7	6	3	0	9	0	9	9
3	13	2	11	4	14	1	14	1	6	9	14	1	3	12	0	15	15
2	2	1	2	1	3	0	3	0	3	0	1	2	3	0	1	2	3
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
SUMS	255	418	166	567	70	663	48	625	44	629	39	634	35	640	18	655	673
ERRS	38	52	25	79	10	99	7	93	7	93	5	94	5	95	3	97	
ERRORS	0	140	76	66	29	30	24	4	34	9	37	2	32	0	17	0	161

865 CASES WERE PROCESSED
192 (OR 22.2 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9068
MINIMUM MARGINAL REPRODUCIBILITY = 0.6750
PERCENT IMPROVEMENT = 0.7318
COEFFICIENT OF SCALABILITY = 0.2541

TABLES 3 and 4 (continued) -- Guttman Scale Response Correlations, Wives and Husbands, Ife-Ilesa Sample

YULE'S Q..

	WOM22	WOM23	WOM24	WOM25	WOM26	WOM27	WOM28	WOM29
WOM22	1.0000	0.8886	0.7601	0.0317	0.4544	-0.4557	-0.3415	-0.0316
WOM23	0.8886	1.0000	0.9626	0.1617	0.4369	0.2871	0.0488	-0.4451
WOM24	0.7601	0.9826	1.0000	0.4624	0.8462	0.6510	0.7363	0.0573
WOM25	0.0317	0.1617	0.4624	1.0000	0.7600	0.8022	0.5771	0.5038
WOM26	0.4544	0.4369	0.8462	0.7600	1.0000	0.9911	0.9797	0.8258
WOM27	-0.4557	-0.2871	0.6510	0.8022	0.9911	1.0000	0.9864	0.8167
WOM28	-0.3415	-0.0488	0.7363	0.5771	0.9797	0.9864	1.0000	0.8414
WOM29	-0.0316	-0.4451	0.0573	0.5038	0.8258	0.8167	0.8414	1.0000
BISERIAL CORR SCALE-ITEM	0.1632	0.3265	0.7114	0.4675	1.1662	1.1551	0.8932	0.3336

YULE'S Q..

	HUSB22	HUSB23	HUSB24	HUSB25	HUSB26	HUSB27	HUSB28	HUSB29
HUSB22	1.0000	0.8416	0.7807	0.7336	0.4611	0.3523	0.2741	-0.1018
HUSB23	0.8416	1.0000	0.9650	-0.1023	0.6552	0.4099	0.3333	-0.0344
HUSB24	0.7807	0.9650	1.0000	-0.2827	0.6842	0.7177	0.7177	0.1172
HUSB25	0.7336	-0.1023	-0.2827	1.0000	0.6074	0.4757	0.2231	0.2149
HUSB26	0.4611	0.6552	0.6842	0.6074	1.0000	0.9445	0.6913	0.7253
HUSB27	0.3523	0.4099	0.7177	0.4757	0.9445	1.0000	0.9534	0.4725
HUSB28	0.2741	0.3333	0.7177	0.2231	0.6913	0.9534	1.0000	0.5065
HUSB29	-0.1018	-0.0344	0.1172	0.2149	0.7253	0.4725	0.5065	1.0000
BISERIAL CORR SCALE-ITEM	0.4210	0.4363	0.5216	0.1919	0.9325	0.8040	0.6841	0.2364

(D) Knowledge, Attitudes and Practice of Family Planning

In addition to some general questions about family planning, respondents were asked about 19 methods of child-spacing and were requested to state whether they had heard of each method, whether they thought it effective or not effective, whether they or their spouses had ever used the method and whether they were using any method at present. These methods included types of modern contraception, types of traditional child-spacing or contraceptive practice, and forms of social practice introduced into the questionnaire by Dr. Adeokun which result in child-spacing activity.

During questioning, respondents were shown:

(1) a diaphragm,

(2) a condom,

(3) a round of oral pills, and

(4) an IUD.

Other methods asked about, in the order of asking, were:

(5) Pills or tablets given by a native doctor to pregnant pregnancy;

(6) "English" foam or jelly;

(7) Native doctor's spermicidal jelly;

(8) Rings, belts, charms, etc., given by a native doctor;

(9) "Three-months' injection" (Depo-Provera);

(10) Withdrawal (for which the Yorubas have a word);

(11) "Safe Period" (to the extent that the rhythm method is known in this area, it is called by this phrase);

(12) Abstinence generally;

(13) Post-Partum abstinence;

(14) Abstinence because one of the married couple leaves home to avoid pregnancy;

(15) Breastfeeding for a longer period than three years, to avoid pregnancy;

Family Planning "Summed" Index:

Never heard of method.....	0
Says effective, never used.....	1
Has used in past.....	2
Using Now.....	3

(The above summed for 19 methods including the "Other" category, post-partum abstinence being omitted since this is not practiced for the specific purpose of child-spacing but rather because of custom. Indices for Husband, Wife, and the Average of H/W Scores compiled).

Family Planning "Maximum" Index:

The same as the above, Husband and Wife scored according to single highest number for any one method, plus average of H/W scores.

Other family planning material including data on attitudes toward several specific situations have not yet been analyzed.

(E) Wife's Fertility

The principal index used has been the following:

$$\text{Fertility Index } (F) = B(i) - B(\bar{a})$$

where $B(i)$ equals number of live births reported by a woman and $B(\bar{a})$ equals mean live births reported by all wives in that age group, women divided into seven age groups as follows: 16-22, 23-27, 28-32, 33-37, 38-42, 43-47, 48-52 (see Table 2).

For some runs, a three-part age-grouping has been used, in order to produce larger numbers in each cell. As noted previously, age groupings have been chosen in order to compensate for "heaping" at the round numbers.

(F) Major Control Variables

In addition to the ages of Husbands and Wives recoded into three categories and seven categories, the major control variables include religion, education, and occupation of Husband and Wife; position of the Wife in the

TABLE 5 -- Knowledge of and Use of Family Planning Methods Ife-Ilesa Survey

	HUSBANDS						WIVES					
	NEVER HEARD OF ANY METHOD		HEARD OF, NEVER USED		HAS USED OR USING NOW		NEVER HEARD OF ANY METHOD		HEARD OF, NEVER USED		HAS USED OR USING NOW	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
(a) Any Modern Service Method (Diaphragm, Condom, Pill, IUD, Foam, Depo)	288	44 2	332	50 9	32	4 9	353	40.8	495	57 2	18	2 1
(b) Any Modern Practice Method (Withdrawal, Rhythm Method)	285	43 7	298	45 7	69	10.6	499	57.6	326	37 6	41	4 7
(c) Any Modern Surgical Method (Abortion, Male or Female Sterilization)	331	50.8	309	47.4	12	1.8	396	45 7	455	52 5	15	1 7
(abc) Any Modern Method	200	30.7	362	55.5	90	13.8	230	26.6	570	65 8	66	7 6
(d) Post-Partum Abstinence or Abstinence Generally	192	29 4	200	30.7	260	39 9	213	24 6	418	48.3	235	27 1
(e) Native Doctor's Methods (Soap, Pill, Rings, Charms, Abortion)	259	39.7	330	50.6	63	9.7	344	39.7	471	54.5	51	5 9
(f) Wife Uses Social Avoidance Methods for Family Planning	191	29.3	301	46.2	160	24 5	227	26.2	462	53.3	177	20 4
(def) Any Traditional Method	159	24.2	182	27.9	311	47.7	144	16.6	418	48.3	304	35 1

polygynous household; size of the residential community (grouped as in Table 1); and migration status of Husband and Wife (i.e., when moved to present location).

Because family incomes are difficult if not impossible to measure in this society, inasmuch as nearly every person including small children engage in petty trading, keep no books or records, and per capita annual incomes are relatively low so that this type of trading produces significant increments to family income, a "Social Status Scale" was developed similar to the one used in the earlier Lagos study, based on possessions seen in the home to be used as an income proxy. Of a list of 20 items recorded by the interviewers, eight were used after testing for Guttman Scalability, these being in order of increasing possession:

(1) Watch;

(2) Permanent Flooring (as opposed to a dirt floor);

(3) Radio (if individually owned by that household, as opposed to a rediffusion system common to several households which is sometimes found in the larger communities);

(4) Wall Clock (a luxury item sold in this area);

(5) Plastered Walls (as opposed to mud walls);

(6) Glass Windows (as opposed to wooden shutters);

(7) Refrigerator; and

(8) Television.

These scaled well more or less in ascending order of costliness (see Table 9). Movable items such as a bicycle, motorcycle, or automobile were not used because these might not always be seen by the field worker. The scale as used here had the advantage that only the top two items rely on electrification (very few respondents had these items even in the larger villages and the towns), so that the scale had roughly equal applicability in all locations.

TABLE 6 -- Guttman Scale, Proxies for Socioeconomic Status Based on Objects Seen in the Home, Ife-Ilesa Sample

```
* * * * * * * * * * G U T T M A N  S C A L E  ( S T A T U S )  S C O R I N G * * * * * *
HR1.5    HAVE CEMENT FLOOR?                    DIVISION POINT =        1.00
HR16     PLASTERED WALLS?                      DIVISION POINT =        1.00
HR17     RADIO?                                DIVISION POINT =        1.00
HR18     WINDOW?                               DIVISION POINT =        1.00
HR19     WRIST WATCH?                          DIVISION POINT =        1.00
HR20     WALL CLOCK?                           DIVISION POINT =        1.00
HR21     REFRIGERATOR?                         DIVISION POINT =        1.00
HR22     TELEVISION?                           DIVISION POINT =        1.00
* * * * * * * * * * * * * * ROW = 1 FOR VALUES EQUAL TO DIVISION POINT AND ABOVE * * * * * * * * * * * *
```

ITEM..	REFRIG.		TV		GLASS WINDOWS		WALL CLOCK		PLASTERED WALLS		RADIO		PERMANENT FLOORING		WRIST WATCH		TOTAL
REP..	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	
ERR																	
STA	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	10
TUS	ERR																
SCA	3	11	0	14	10	4	1	13	0	14	0	14	0	14	0	14	14
LE			ERR														
	13	5	12	6	0	18	2	16	2	16	2	16	0	18	0	18	18
					ERR												
	54	13	61	6	55	12	10	57	7	60	11	56	2	65	1	66	67
							ERR										
	57	31	84	4	82	6	66	22	15	73	12	76	2	66	4	64	88
									ERR								
	96	0	94	2	89	7	76	20	41	55	49	47	13	83	22	74	96
											ERR						
	83	0	83	0	80	3	75	8	63	20	47	36	41	42	26	57	83
													ERR				
	73	0	73	0	73	0	71	2	73	0	67	6	58	15	23	50	73
															ERR		
	44	0	44	0	44	0	44	0	44	0	44	0	44	0	44	0	44
SUMS	425	40	451	42	438	55	345	148	245	248	232	251	166	333	120	373	493
PCTS	92	8	91	9	89	11	70	30	50	50	47	53	32	68	24	76	
ERRORS	0	30	0	13	15	28	13	54	24	75	74	42	58	15	76	0	120

```
   377 CASES WERE PROCESSED
    14 (OR 14.6 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8662
MINIMUS MARGINAL REPRODUCIBILITY = 0.7352
IMPROVEMENT = 0.1310
COEFFICIENT OF SCALABILITY = 0.5610
```

A comparative view of the distribution of occupations in Ife and Ilesa Divisions is given in Tables 7 and 8, the first showing occupations in the sample in comparison with those for Oyo Province (of which the two divisions form a part) as given in the 1963 Federal Census, and a second table showing urban and rural comparisons Oyo State as given in the census (urban figure in this table including metropolitan Ibadan). While occupational classifications in censuses (and perhaps in demographic surveys as well) always seem to be frustratingly unspecific, the point is well demonstrated in these tables that now and in the past the population in our study area has been engaged in outdoor occupations, principally farming and petty trading, that office workers of all types comprise less than 5% of the population even in urban places, and that to this extent the urban-rural distinction is not great. One of the rationales for selecting this research area has been that the area appears relatively homogenous with respect to many of the social, economic, and medical variables which are thought to influence fertility (i.e. ethnicity, social structure, economic activity, access to medical facilities). We have shown the area to be comprised almost entirely of one ethnic group, and these urban-rural occupational similarities also appear.*

With respect to access to medical facilities, there are hospitals in Ife and Ilesa, the former Seventh Day Adventist Hospital and the Government General Hospital in Ife and the former Wesley Guild Hospital in Ilsea now being part of the teaching hospital system of the University of Ife Faculty of Health Sciences. Maternal and child health clinics are also located in the two towns and are operated by the university. A network of government dispensaries and maternity centers is spread thinly throughout the research area (the word "thinly" applying to staff, drugs, and support generally), these under-utilized facilities being slowly upgraded under the national Basic Health Scheme but the process being much too slow to have had

*The reader is perhaps aware that the 1963 Federal Census is the last available for Nigeria, the 1973 Census results not having been released. The present Oyo State was at that time one province of the then Western Region of Nigeria. Other comparative breakdowns are in general not available from the 1963 Census data.

TABLE 7

Occupations, 1963 Census and Respondents in Survey

OCCUPATIONAL CATEGORY (Categories Used in 1963 Federal Census)	1963 CENSUS, OYO PROVINCE						RESPONDENTS IN SURVEY					
	MALES		FEMALES		TOTAL		MALES		FEMALES		TOTAL	
	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
1. Professional, Technical and Related (includes native Herbalists and Carvers).	16,792	1.9	4,174	0.4	21,147	2.3	24	1.7	14	1.0	38	2.6
2. Administrative, Executive and Related (includes Business Managers, Chiefs, etc.).	2,741	0.3	392	0.04	3,133	0.3	9	0.6	3	0.2	12	0.8
3. Clerical	11,670	1.3	1,399	0.1	13,069	1.4	7	0.5	5	0.3	12	0.8
4. Sales Workers	53,854	5.9	218,073	24.0	271,927	29.9	67	4.6	616	42.6	683	47.2
5. Farmers, Fishermen, Hunters, Loggers, and Related.	307,424	33.8	9,202	1.0	316,626	34.8	380	26.3	112	7.7	492	34.0
6. Miners, Quarrymen, and Related.	410	0.05	14	0.002	424	0.05	0	0.0	0	0.0	0	0.0
7. Transport and Communication Workers.	14,492	1.6	196	0.02	14,688	1.6	21	1.5	0	0.0	21	1.5
8. Service, Sport and Recreation Workers.	14,006	1.5	10,985	1.2	24,991	2.7	5	0.3	4	0.3	9	0.6
9. Craftsmen, Production Process Workers, and Laborers	87,170	9.6	34,600	3.8	121,770	13.4	69	4.8	77	5.3	146	10.1
10. Inadequately Described Occupations (includes Housewives, most of whom claim vague forms of employment).	4,429	0.5	118,225	13.0	122,654	13.5	2	0.1	32	2.2	34	2.3
TOTAL EMPLOYED PERSONS	513,168	56.4	397,261	43.6	910,429	100.0	584	40.4	863	59.6	1,447	100.0
11. Unemployed, Retired, Students, etc.							4		3		7	

TABLE 8

Employed Persons by Occupation and by Urban and Rural Residence

from 1963 Census Data, Oyo Province

(NOTE: Occupational data not broken down by divisions in Census reports and hence not available for Ife-Ilesha Survey Area).

OCCUPATIONAL CATEGORY	SEX	URBAN No.	URBAN %	RURAL No.	RURAL %	TOTAL No.	TOTAL %
Professional, Technical and Related (includes native herbalists and carvers).	Male	6,652	2.4	10,320	1.6	16,972	1.9
	Female	2,029	0.8	2,146	0.3	4,175	0.4
	TOTAL	8,681	3.2	12,466	1.9	21,147	2.3
Administrative, Executive and Related (includes business managers, chiefs, etc.)	Male	1,128	0.4	1,613	0.3	2,741	0.3
	Female	221	0.1	171	0.03	392	0.04
	TOTAL	1,349	0.5	1,784	0.3	3,133	0.3
Clerical	Male	5,511	2.1	6,159	1.0	11,670	1.3
	Female	655	0.2	744	0.1	1,399	0.1
	TOTAL	6,903	2.3	6,903	1.1	13,069	1.4
Sales Workers (majority are female petty traders, a traditional occupation)	Male	18,542	6.9	35,312	5.5	53,854	5.9
	Female	80,226	29.9	137,847	21.5	218,073	24.0
	Total	98,768	36.8	173,159	27.0	271,927	29.9
Farmers, Fishermen, Hunters, Loggers, and Related (Farmers comprise 97% of this group)	Male	68,808	22.6	246,616	38.4	307,424	33.8
	Female	2,077	0.8	7.125	1.1	9,202	1.0
	TOTAL	62,885	23.4	253,741	39.5	316,626	34.8
Miners, Quarrymen, and Related	Male	59	0.02	351	0.1	410	0.05
	Female	4	0.001	10	0.002	14	0.002
	TOTAL	63	0.02	361	0.1	424	0.05
Transport and Communication Workers	Male	7,796	2.9	6,696	1.0	14,492	1.6
	Female	104	0.04	92	0.01	196	0.02
	TOTAL	7,900	2.9	6,788	1.1	14,688	1.6
Craftsmen, Production Process Workers, and Labourers	Male	36,663	13.6	50,537	7.9	87,170	9.6
	Female	5,657	2.1	28,943	4.5	34,600	3.8
	TOTAL	42,290	15.7	79,480	12.4	121,770	13.4
Service, Sport, and Recreation Workers (mostly service workers)	Male	3,985	1.5	10,021	1.6	14,006	1.5
	Female	2,073	0.8	8,912	1.3	10,985	1.2
	TOTAL	6,058	2.3	18,933	2.9	24,991	2.7
Inadequately Described Occupations. (See Note A. below)	Male	2,061	0.8	2,368	0.4	4,429	0.5
	Female	32,370	12.1	85,855	13.4	118,225	13.0
	TOTAL	34,431	12.9	88,223	13.8	122,654	13.5
TOTAL EMPLOYED PERSONS	Male	143,175	53.3	369,993	57.6	513,168	56.4
	Female	125,416	46.7	271,845	42.4	397,261	43.6
	TOTAL	268,591	100.0	641,838	100.0	910,429	100.0

NOTE A: Dr. Adeokun thinks the majority of these are housewives pretending to be employed.

an impact on our data. Rather than examining these facilities in the research, we have asked respondents about their use of hospitals and other facilities.

The question of distance from facilities has not been extensively analyzed as yet and one is reluctant to make too many comments about this aspect at this point in the analysis. However, while it is gratifying to report that in the research cluster lying just one block away from one of the Ife clinics, 95% of children have been immunized, the data for this variable in general do not show greater response in the towns than in the villages, one of the highest response patterns being in a village of 1,650 persons in one of the remotest segments of the sample (Ajido); within walking distance a few kilometers away, another village of 4,150 persons (Owode) reports only a single immunization for a single child. Data are summarized in Tables 9 and 10; also see map of the research area (Figure 6).

V. RESULTS OF THE DATA ANALYSIS (PRELIMINARY FINDINGS)

To test the major hypotheses, relationships were examined according to the following plan.

1. NUTRITIONAL STATUS OF CHILDREN, according to weight-for-height indices for the smallest child and the average of all children of each mother in the 0-4 years age category (WTXHTAV, WTXHTSM) and according to the three-part index based on the Morley weight-for-age percentiles, for the smallest (i.e. lowest scoring) child of each mother (MORLEY), were matched against:

(A) Child Mortality

Including total deaths for each mother, deaths for mothers in each of the three major age categories, deaths compared with mean deaths reported by all mothers in each of the seven major age groups (MORTINDX), and this measure corrected for births reported by mothers in each of the seven age groups (MORTALTY);

TABLE 9 -- Immunization of Children, by Size of Residential Community, Ife-Ilesa Sample

IFE STUDY - WOMAN FILE
MAJOR HEADA

BUCC

CROSSTAB NO. 1

LOCATION

	1 100,000+ 1	2 10-49,000 2	3 4-9,000 3	4 LT 2500 4	TOTAL
ONE, BLANK, 0 0	63.4%	74.3%	80.7%	62.3%	
	211	127	144	86	70.3% 568
ONE CHILD 1	32.1%	23.4%	9.4%	35.5%	
	107	40	14	49	26.0% 210
TWO-PLUS 2	4.5%	2.3%	4.5%	2.2%	
	15	4	8	3	3.7% 30
PERCENT TOTAL	41.2% 332	21.2% 171	20.5% 166	17.1% 139	100.0% 808

NO. 112
ANY CHILD IMMUNIZED?

UPPER CELL ENTRIES ARE PERCENT OF COLUMN TOTALS

CHI-SQUARE 42.932*** SIGNIFICANCE UNDER .001

TABLE SUMMARY

TOTAL NUMBER OF UNITS IN TABLE 808
NUMBER OF UNITS OMITTED DUE TO BLANKS 33
NUMBER OF UNITS OMITTED FOR NO CHILD SCORES 24

(NOTE: The chi-square is significant, but in fact there is no consistent pattern with respect to size of residential community, which in turn tends to vary with distance from hospitals and clinics. The purpose of this and Table 10 is to reinforce this point, which emerges in a number of the data runs based on Location).

TABLE 10 -- Immunization of Children by Sample Site, Ife-Ilesa Survey

	6	7	8	KL 9	JESA 10	12	RO 13	14
	85.7% 12	76.9% 10	81.5% 22	42.9% 9	15.4% 2	22.2% 4	68.8% 11	96.3% 26
	14.3% 2	15.4% 2	7.4% 2	52.4% 11	84.6% 11	77.8% 14	31.3% 5	3.7% 1
		7.7% 1	11.1% 3	4.8% 1				
K	1.7% 14	1.6% 13	3.3% 27	2.6% 21	1.6% 13	2.2% 18	2.0% 16	3.3% 27

LA	ALAPATA 20	YINMI 21	OBUTU 22	OLOWOOKERE 23	ILES-OKESHA 31	ILES-IJOKA 32	ILES-IGBOJI 33	ILES-IREJA 34
	30.0% 6	100.0% 35	100.0% 11	72.2% 13	100.0% 14	100.0% 34	81.5% 22	39.5% 15
	60.0% 12			5.6% 1			18.5% 5	60.5% 23
	10.0% 2			22.2% 4				
X	2.5% 20	4.3% 35	1.4% 11	2.2% 18	1.7% 14	4.2% 34	3.3% 27	4.7% 38

IO	IFE-MURE 45	IFE-ILODE 46	TOTAL
	85.2% 23	5.7% 2	70.3% 568
	14.8% 4	94.3% 33	26.0% 210
X	3.3% 27	4.3% 35	100.0% 808

(B) Perceived Child Survival Chances

As reported by Wife, Husband, and Both (WSURV3, HSURV3, HWSURV3), these being three-part scales as described in Section 4c;

(C) Family Planning Practice

By Wives, Husbands and Both, according to the summed scale and maximum use scale described in Section 4d (WFPSUM4, HFPSUM4, HWFPSUM4, WFPMAX, HFPMAX, HWFPMAX):

(D) Wife's Fertility History

According to total births, births for wives in three age groups, and by the index described in Section 4e for births against mean births in seven age groups (FERTINDX).

The same plan was then followed for each variable in descending order, i.e.:

2. CHILD MORTALITY, matched against (B), (C), and (D).
3. PERCEIVED CHILD SURVIVAL CHANCES, matched against (C) and (D).
4. FAMILY PLANNING PRACTICE, matched against (D).

While related measures were highly correlated with each other (i.e. MORLEY, WTXHTAV, WTXHTSM) and so forth, very little correlation was found between any of these major variables, even when the sample was broken down by varying age groups (see overall Correlation Matrix, Table 11). Other controls have not been carefully introduced up to this point, but it does not appear that anything very significant is going to be ferreted out. An important factor must be the very large number of mothers reporting zero child mortality, and the very large number of respondents reporting the same thing about child survival (i.e. that it is improved).

While it is urgent to pursue all of these relationships a bit further, we have dropped this line of analysis for a time in order to look at the data

from the opposite direction, so to speak, and to compare the Wives' Fertility Indices against other variables. This approach has produced results which do seem to be a little more interesting.

For categories within the variables education, occupation, religion, social status, and size of community, births have been compared with age-adjusted mean births for the sample (i.e. for each Wife in a category, $B(i) - B(\bar{a})$ has been computed and the mean for each category noted, whether plus or minus).

In a gross way, these results can be compared with fertility indices in each of the same categories for the previous Lagos sample. The latter was a prospective study and indices were based on mean births in the study year for Wives in a category, compared with age-adjusted sample means, the results being noted plus or minus. The size of variation from expected means in the retrospective Ife-Ilesa and prospective Lagos studies cannot be compared, therefore, but the direction and pattern of variations can be of interest.

The data are summarized in Table 12. If one approaches these data from the viewpoint that different categories can be described as closer to traditional African life ways, or show different degrees of exposure to modernizing forces, than the patterns begin to show some similarity.

With "Education", for example, for both Wives and Husbands in both Ife and Lagos, fertility is lowest in the "No School" category, these respondents presumably being least exposed to modernizing forces, and a rise is seen with some education, falling off again with more advanced education. Among Husbands, the fertility of their wives is greatest if the man has a secondary education, in both the Ife and Lagos samples, declining among Lagos men with university education (there were too few men in the Ife sample to make this comparison). For Wives, the highest level in both samples is among primary school attenders, falling off in both samples for secondary school

attenders. (Since Husbands tend to mar y Wives with less education than themselves, the pattern is thus consistent for both Ife and Lagos).

The same pattern is seen for Social Status, assuming one links possession of these various items like clocks and refrigerators to modernization, and the pattern also is seen for Location of Residents when one notes that Status is highest in the large "villages", lower in the smaller villages and also in the towns. With Religion, there are some problems although the general pattern remains. Religion was not scored in this way for the Lagos sample because so few significant variations along any dimension appeared in these data with regard to Religion. It may be that Lagosians' behavior is less affected by religion. For the Ife sample, Traditionalists (the few that claim this) and Moslems who are generally regarded as closer to traditional ways have lower fertility. The very high fertility for Wives of Separatist Husbands, and low fertility for Roman Catholic Wives, seem to go against the pattern, although strong religious movements are found everywhere in this rural community, Seventh Day Adventists being prominent because of the mission in Ife and perhaps having some greater exposure to modernizing influences because of the hospital and school (many of the field workers mistakenly recorded the Adventists with the Separatists).

With respect to Occupation, it has previously been noted that occupational classifications in surveys tend to be frustratingly unspecific, however much effort may have gone into the survey design. Traditional occupations rank low in all groups and office workers rank high, which conforms with the pattern. "Housewives" are low in all groups, and it is not clear whether a Housewife is closer to traditional ways or not. One can argue that were she more modern, she would be out working; the writer prefers to leave further speculation here until further data have been examined.

As noted elsewhere, considerable material in the data have not yet been examined in depth, including data on attitudes toward child-spacing, child care,

TABLE 11 -- Correlations, Main Variables, By Age of Woman

Four pages of printouts follow:

1 -- For all women in sample.
2 -- For women aged 16-27.
3 -- For women aged 28-37.
4 -- For women aged 38-52.

Variable Descriptions:

"MORLEY"	Mother's lowest scoring child aged 0-4 years, by Morley Weight-for-Age Percentiles (see page 24).
"WTXHTSM"	Mother's lowest scoring child aged 0-4 years, by formula (Weight/Height-Squared) x 100 (see page 23).
"WTXHTAV"	Ditto, all children aged 0-4 years averaged.
"MORTINDX"	Child Mortality Index for a Woman (Total Reported Child Deaths) minus (Average Child Deaths for Women of that Age Group)
"MORTALTY"	Ditto, adjusted for Woman's Total Births and for Age Group (see page 28).
"WSURV3" "HSURV3" "HWSURV3"	Perceived Child Survival Chances Index, for Woman, Husband, and Wife-Husband summed (see pages 30-31).
"WFPSUM4" "HFPSUM4" "HWFPSUM4"	Family Planning KAP Index, attributes summed, for Wife, Husband, and Husband-Wife averaged (see pages 32-34).
"WFPMAX" "HFPMAX" "HWFPMAX"	Family Planning Use Index, i.e. degree of use of any child-spacing method (see page 34).
"FERTINDX"	Woman's Fertility Index, i.e. (Total Births for Woman) minus (Average Births for Women that Age Group) (see page 34).
"SESCAT"	Socio-Economic Status Scale (see pages 35, 35a).
"LOCATION"	Size of Residential Community (see pages 9-10 and Table I).

TABLE 11 -- Correlations, Main Variables, by Age of Woman

[All Women in Sample]

CORRELATION COEFFICIENTS

VARIABLE DESCRIPTION	NAME	MORLEY	WTXHTSM	WTXHTAV	MORTINDX	MORTALTY	WSURV3	HSURV3	HWSURV3	WFPSUM4	HFPSUM4
LOWEST CHLD WT.MORLEY S.	MORLEY	1.000	0.441**	0.420**	0.066	0.065	0.067	0.069	0.036	0.000	-0.043
WT-HT INDEX.LOWEST CHLD	WTXHTSM	0.441**	1.000	0.962**	0.073	0.069	0.040	-0.096	-0.021	0.115	0.012
WT-HT INDX.AVE ALL CHLDN	WTXHTAV	0.420**	0.962**	1.000	0.062	0.075	0.028	-0.101	-0.016	0.095	0.030
CHILD MORTALITY INDEX	MORTINDX	0.066	0.073	0.062	1.000	0.734**	0.080*	0.063	0.058	0.145**	0.088*
CHILD MORTALITY INDEX	MORTALTY	0.065	0.069	0.075	0.734**	1.000	-0.032	-0.012	-0.047	0.089*	0.095*
	WSURV3	0.067	0.040	0.028	0.080*	-0.032	1.000	0.451**	0.825**	-0.028	-0.040
	HSURV3	0.069	-0.096	-0.101	0.063	-0.012	0.451**	1.000	0.784**	-0.039	-0.005
	HWSURV3	0.036	-0.021	-0.016	0.058	-0.047	0.825**	0.784**	1.000	-0.069*	-0.013
	WFPSUM4	0.000	0.115	0.095	0.145**	0.089*	-0.028	-0.039	-0.069*	1.000	0.306**
	HFPSUM4	-0.043	0.012	0.030	0.088*	0.095*	-0.040	-0.005	-0.013	0.306**	1.000
	HWFPSUM4	-0.042	0.057	0.051	0.120**	0.095**	-0.013	-0.022	-0.028	0.787**	0.754**
	WFPMAX	-0.041	-0.037	-0.041	0.032	0.054	-0.150**	-0.087*	-0.165**	0.480**	0.128**
	HFPMAX	-0.013	0.098	0.087	0.056	0.032	-0.132**	-0.208**	-0.181**	0.213**	0.518**
	HWFPMAX	-0.003	0.087	0.071	0.059	0.041	-0.170**	-0.217**	-0.185**	0.278**	0.384**
WIFE'S FERTILITY INDEX	FERTINDX	0.016	0.050	0.065	0.287**	-0.014	0.155**	0.147**	0.175**	0.088*	0.103**
	WMN162	-0.019	-0.017	0.001	-0.010	-0.077*	0.127**	0.140**	0.143**	0.050	0.018
	WMN167	0.011	0.012	0.019	0.258**	-0.020	0.160**	0.143**	0.169**	0.097**	0.028
	SESCAT	0.017	-0.174**	-0.169**	0.018	0.026	-0.004	-0.054	-0.075*	0.018	0.057
	LOCATION	0.124*	0.245**	0.246**	0.080*	-0.010	0.196**	0.064	0.232**	-0.094**	-0.027

VARIABLE DESCRIPTION	NAME	HWFPSUM4	WFPMAX	HFPMAX	HWFPMAX	FERTINDX	WMN162	WMN167	SESCAT	LOCATION
LOWEST CHLD WT.MORLEY S.	MORLEY	-0.042	-0.041	-0.013	-0.003	0.016	-0.019	0.011	0.017	0.124*
WT-HT INDEX.LOWEST CHLD	WTXHTSM	0.057	-0.037	0.098	0.087	0.050	-0.017	0.012	-0.174**	0.245**
WT-HT INDX.AVE ALL CHLDN	WTXHTAV	0.051	-0.041	0.087	0.071	0.065	0.001	0.019	-0.169**	0.246**
CHILD MORTALITY INDEX	MORTINDX	0.120**	0.032	0.056	0.059	0.287**	-0.010	0.258**	0.018	0.080*
CHILD MORTALITY INDEX	MORTALTY	0.095**	0.054	0.032	0.041	-0.014	-0.077*	-0.020	0.026	-0.010
	WSURV3	-0.013	-0.150**	-0.132**	-0.170**	0.155**	0.127**	0.160**	-0.004	0.196**
	HSURV3	-0.022	-0.087*	-0.208**	-0.217**	0.147**	0.140**	0.143**	-0.054	0.064
	HWSURV3	-0.028	-0.165**	-0.181**	-0.185**	0.175**	0.143**	0.169**	-0.075*	0.232**
	WFPSUM4	0.787**	0.480**	0.213**	0.278**	0.088*	0.050	0.097**	0.018	-0.094**
	HFPSUM4	0.754**	0.128**	0.518**	0.384**	0.103**	0.018	0.028	0.057	-0.027
	HWFPSUM4	1.000	0.388**	0.434**	0.384**	0.100**	0.056	0.073*	0.041	-0.103**
	WFPMAX	0.388**	1.000	0.175**	0.561**	-0.012	-0.001	0.067	0.133**	-0.181**
	HFPMAX	0.434**	0.175**	1.000	0.631**	0.023	-0.050	-0.016	-0.031	0.004
	HWFPMAX	0.384**	0.561**	0.631**	1.000	0.011	-0.034	-0.009	0.022	-0.005
WIFE'S FERTILITY INDEX	FERTINDX	0.100**	-0.012	0.023	0.011	1.000	0.745**	0.919**	0.074*	0.163**
	WMN162	0.056	-0.001	-0.060	-0.034	0.745**	1.000	0.824**	0.090*	0.114**
	WMN167	0.073*	0.007	-0.016	-0.009	0.919**	0.824**	1.000	0.071	0.156**
	SESCAT	0.041	0.133**	-0.031	0.022	0.074*	0.090*	0.071	1.000	-0.334**
	LOCATION	-0.103**	-0.181**	0.004	-0.005	0.163**	0.114**	0.156**	-0.334**	1.000

NUMBER OF UNITS

VARIABLE DESCRIPTION	NAME	MORLEY	WTXHTSM	WTXHTAV	MORTINDX	MORTALTY	WSURV3	HSURV3	HWSURV3	WFPSUM4	HFPSUM4
LOWEST CHLD WT.MORLEY S.	MORLEY	289	263	263	280	278	289	240	289	289	240
WT-HT INDEX.LOWEST CHLD	WTXHTSM	263	264	264	255	254	264	219	264	264	219
WT-HT INDX.AVE ALL CHLDN	WTXHTAV	263	264	264	255	254	264	219	264	264	219
CHILD MORTALITY INDEX	MORTINDX	280	255	255	805	800	805	669	805	805	671
CHILD MORTALITY INDEX	MORTALTY	278	254	254	800	800	800	664	800	800	666
	WSURV3	289	264	264	805	800	865	712	865	865	717
	HSURV3	240	219	219	669	664	712	712	712	712	711
	HWSURV3	289	264	264	805	800	865	712	865	865	717
	WFPSUM4	289	264	264	805	800	865	712	865	865	717
	HFPSUM4	240	219	219	671	666	717	711	717	717	717
	HWFPSUM4	289	264	264	805	800	865	712	865	865	717
	WFPMAX	289	264	264	805	800	865	712	865	865	717
	HFPMAX	240	219	219	671	666	717	711	717	717	717
	HWFPMAX	289	264	264	805	800	865	712	865	865	717
WIFE'S FERTILITY INDEX	FERTINDX	279	255	255	800	800	804	668	804	804	670
	WMN162	284	259	259	805	800	829	687	829	829	692
	WMN167	280	256	256	800	800	819	678	819	819	683
	SESCAT	260	238	238	713	708	768	645	768	768	647
	LOCATION	289	264	264	805	800	865	712	865	865	717

VARIABLE DESCRIPTION	NAME	HWFPSUM4	WFPMAX	HFPMAX	HWFPMAX	FERTINDX	WMN162	WMN167	SESCAT	LOCATION
LOWEST CHLD WT.MORLEY S.	MORLEY	289	289	240	289	279	284	280	260	289
WT-HT INDEX.LOWEST CHLD	WTXHTSM	264	264	219	264	255	259	256	238	264
WT-HT INDX.AVE ALL CHLDN	WTXHTAV	264	264	219	264	255	259	256	238	264
CHILD MORTALITY INDEX	MORTINDX	805	805	671	805	800	805	800	713	805
CHILD MORTALITY INDEX	MORTALTY	800	800	666	800	800	800	800	708	800
	WSURV3	865	865	717	865	804	829	819	768	865
	HSURV3	712	712	711	712	668	687	678	645	712
	HWSURV3	865	865	717	865	804	829	819	768	865
	WFPSUM4	865	865	717	865	804	829	819	768	865
	HFPSUM4	717	717	717	717	670	692	683	647	717
	HWFPSUM4	865	865	717	865	804	829	819	768	865
	WFPMAX	865	865	717	865	804	829	819	768	865
	HFPMAX	717	717	717	717	670	692	683	647	717
	HWFPMAX	865	865	717	865	804	829	819	768	865
WIFE'S FERTILITY INDEX	FERTINDX	804	804	670	804	804	804	804	712	804
	WMN162	829	829	692	829	804	829	819	735	829
	WMN167	819	819	683	819	804	819	819	725	819
	SESCAT	768	768	647	768	712	735	725	768	768
	LOCATION	865	865	717	865	804	829	819	768	865

CORRELATION COEFFICIENTS [Women 16-27]

VARIABLE DESCRIPTION	NAME	MORLEY	WTXMTSM	WTXMTAV	MORTINDX	MORTALTY	WSURV3	MSURV3	MWSURV3	WFPSUM4	MFPSUM4
LOWEST CHLD MTHLY MORLEY	MORLEY	1.000	0.403***	0.426***	0.141	0.177	0.208**	0.101	0.124	-0.057	-0.102
WTHT INDEX-LOW ST CHLD	WTXMTSM	0.403***	1.000	0.954***	0.136	0.150	0.207**	0.118	0.195	0.095	-0.145
WTHT INDEX-AVG ALL CHLDN	WTXMTAV	0.426***	0.954***	1.000	0.113	0.142	0.170**	0.126	0.205	0.101	-0.127
CHILD MORTALITY INDEX	MORTINDX	0.141	0.139	0.113	1.000	0.869***	0.110	-0.094	-0.111	0.053	0.019
CHILD MORTALITY INDEX	MORTALTY	0.177	0.150	0.142	0.869***	1.000	-0.073	-0.048	-0.065	-0.014	0.059
WSURV3	WSURV3	0.208**	0.207**	0.170**	-0.110	-0.073	1.000	0.327***	0.784***	-0.065	-0.020
MSURV3	MSURV3	0.101	0.118	0.126	-0.094	-0.048	0.327***	1.000	0.727***	0.001	0.104
MWSURV3	MWSURV3	0.124	0.195	0.205	-0.111	-0.065	0.784***	0.727***	1.000	-0.062	0.106
WFPSUM4	WFPSUM4	-0.057	0.095	0.101	0.053	-0.014	-0.065	0.001	-0.062	1.000	0.102
MFPSUM4	MFPSUM4	-0.102	-0.145	-0.127	0.019	0.059	-0.020	0.104	0.106	0.102	1.000
MWFPSUM4	MWFPSUM4	-0.049	-0.107	0.008	0.035	0.031	-0.050	0.033	-0.009	0.728***	0.670***
WFPMAX	WFPMAX	-0.057	-0.051	-0.018	0.004	0.035	0.342***	0.077	0.002	0.482***	0.008
MFPMAX	MFPMAX	-0.017	-0.081	-0.088	-0.078	-0.046	0.002	-0.170*	-0.027	0.003	0.342***
MWFPMAX	MWFPMAX	0.033	-0.106	-0.093	0.003	-0.005	-0.021	-0.149*	0.003	0.131	0.212**
WIFE'S FERTILITY INDEX	FERTINDX	0.046	0.002	0.052	0.221***	-0.029	-0.128	0.005	0.023	-0.012	0.128
WMN102	WMN102	-0.010	-0.048	0.024	0.223***	-0.026	-0.034	0.004	0.032	0.011	0.157*
SESCAT	SESCAT	-0.025	-0.161	-0.142	0.117	-0.141	-0.113	-0.029	-0.027	-0.062	0.075
LOCATION	LOCATION	0.235***	0.207***	0.214***	0.025	-0.031	0.225***	0.099	0.234***	-0.172***	-0.034

VARIABLE DESCRIPTION	NAME	MWFPSUM4	WFPMAX	MFPMAX	MWFPMAX	FERTINDX	WMN102	SESCAT	LOCATION
LOWEST CHLD MTHLY MORLEY	MORLEY	-0.049	-0.057	-0.017	0.033	0.046	-0.010	-0.025	0.235***
WTHT INDEX-LOW ST CHLD	WTXMTSM	-0.107	-0.051	-0.081	-0.106	0.002	-0.048	-0.161	0.207***
WTHT INDEX-AVG ALL CHLDN	WTXMTAV	0.008	-0.018	-0.088	-0.093	0.052	0.024	-0.142	0.214***
CHILD MORTALITY INDEX	MORTINDX	0.035	0.004	-0.078	0.003	0.221***	0.223***	0.117	-0.025
CHILD MORTALITY INDEX	MORTALTY	0.031	0.035	-0.046	-0.005	-0.029	0.223***	0.141	-0.031
WSURV3	WSURV3	-0.050	-0.042	0.002	-0.021	-0.128	-0.034	-0.113	0.225***
MSURV3	MSURV3	0.033	0.077	-0.170*	-0.149*	0.005	0.004	-0.029	0.099
MWSURV3	MWSURV3	-0.009	0.002	-0.027	0.003	0.023	0.032	-0.027	0.234***
WFPSUM4	WFPSUM4	0.728***	0.482***	0.063	0.131	-0.012	0.010	-0.062	-0.172*
MFPSUM4	MFPSUM4	0.670***	0.008	0.342***	0.212**	0.128	0.157*	0.075	-0.038
MWFPSUM4	MWFPSUM4	1.000	0.328***	0.275***	0.256***	0.059	0.104	0.029	-0.160*
WFPMAX	WFPMAX	0.328***	1.000	0.012	0.366***	0.002	0.057	0.186**	-0.045
MFPMAX	MFPMAX	0.275***	0.012	1.000	0.859***	-0.040	-0.009	-0.086	0.139
MWFPMAX	MWFPMAX	0.256***	0.366***	0.859***	1.000	-0.033	-0.014	-0.064	0.125
FERTINDX	FERTINDX	0.059	0.002	-0.040	-0.033	1.000	0.735***	0.097	0.040
WMN102	WMN102	0.104	0.057	-0.009	-0.014	0.735***	1.000	0.195**	0.021
SESCAT	SESCAT	0.029	0.186**	-0.086	-0.064	0.097	0.195**	1.000	-0.314***
LOCATION	LOCATION	-0.160*	-0.045	0.139	0.125	0.040	0.021	-0.314***	1.000

NUMBER OF UNITS

VARIABLE DESCRIPTION	NAME	MORLEY	WTXMTSM	WTXMTAV	MORTINDX	MORTALTY	WSURV3	MSURV3	MWSURV3	WFPSUM4	MFPSUM4
LOWEST CHLD MTHLY MORLEY	MORLEY	102	91	91	102	102	102	86	102	102	85
WTHT INDEX-LOW ST CHLD	WTXMTSM	91	91	91	91	91	91	75	91	91	74
WTHT INDEX-AVG ALL CHLDN	WTXMTAV	91	91	91	91	91	91	75	91	91	74
CHILD MORTALITY INDEX	MORTINDX	207	91	91	207	207	207	171	207	207	170
CHILD MORTALITY INDEX	MORTALTY	207	91	91	207	207	207	171	207	207	170
WSURV3	WSURV3	217	91	91	217	217	217	178	217	217	177
MSURV3	MSURV3	178	75	75	178	178	178	178	178	178	177
MWSURV3	MWSURV3	217	91	91	217	217	217	178	217	217	177
WFPSUM4	WFPSUM4	102	91	91	207	207	217	178	217	217	177
MFPSUM4	MFPSUM4	85	74	74	170	170	177	177	177	177	177
MWFPSUM4	MWFPSUM4	102	91	91	207	207	217	178	217	217	177
WFPMAX	WFPMAX	102	91	91	207	207	217	178	217	217	177
MFPMAX	MFPMAX	85	74	74	170	170	177	177	177	177	177
MWFPMAX	MWFPMAX	102	91	91	207	207	217	178	217	217	177
WIFE'S FERTILITY INDEX	FERTINDX	102	91	91	207	207	208	178	208	208	171
WMN102	WMN102	102	91	91	207	207	209	178	209	209	171
SESCAT	SESCAT	94	83	83	186	186	198	168	198	198	167
LOCATION	LOCATION	102	91	91	207	207	217	178	217	217	177

VARIABLE DESCRIPTION	NAME	MWFPSUM4	WFPMAX	MFPMAX	MWFPMAX	FERTINDX	WMN102	SESCAT	LOCATION
LOWEST CHLD MTHLY MORLEY	MORLEY	102	102	85	102	102	102	94	102
WTHT INDEX-LOW ST CHLD	WTXMTSM	91	91	74	91	91	91	83	91
WTHT INDEX-AVG ALL CHLDN	WTXMTAV	91	91	74	91	91	91	83	91
CHILD MORTALITY INDEX	MORTINDX	207	207	170	207	207	207	186	207
CHILD MORTALITY INDEX	MORTALTY	207	207	170	207	207	207	186	207
WSURV3	WSURV3	217	217	177	217	208	209	198	217
MSURV3	MSURV3	178	178	177	178	172	172	168	178
MWSURV3	MWSURV3	217	217	177	217	208	209	198	217
WFPSUM4	WFPSUM4	217	217	177	217	208	209	198	217
MFPSUM4	MFPSUM4	177	177	177	177	171	171	167	177
MWFPSUM4	MWFPSUM4	217	217	177	217	208	209	198	217
WFPMAX	WFPMAX	217	217	177	217	208	209	198	217
MFPMAX	MFPMAX	177	177	177	177	171	171	167	177
MWFPMAX	MWFPMAX	217	217	177	217	208	209	198	217
WIFE'S FERTILITY INDEX	FERTINDX	208	208	171	208	208	208	190	208
WMN102	WMN102	209	209	171	209	208	209	191	209
SESCAT	SESCAT	198	198	167	198	190	191	198	198
LOCATION	LOCATION	217	217	177	217	208	209	198	217

[Women 28-37]

CORRELATION COEFFICIENTS

VARIABLE DESCRIPTION	NAME	MONLEY	#TXMTSM	#TXMTAV	MORTINDX	MORTALTY	#SURV3	MSURV3	MWSURV3	MFPSUM4	MFPSUM4
LOWEST CHLD #TXMONLEY A	MONLEY	1.000	-0.462****	0.400****	-0.036	-0.068	0.020	0.147	0.018	-0.040	-0.107
#TXMT INDIA,ALL WEST CHLD	#TXMTSM	0.462****	1.000	0.959****	-0.025	-0.001	-0.099	-0.243*	-0.171	0.185	0.145
#TXMT INDIA,ALL ALL CHLDN	#TXMTAV	0.400****	0.959****	1.000	-0.025	0.011	-0.104	-0.255*	-0.106	0.184	0.108
CHILD MORTALITY INDEX	MORTINDX	-0.036	-0.025	-0.025	1.000	0.831****	0.033	-0.039	-0.036	0.118*	0.051
CHILD MORTALITY INDEX	MORTALTY	-0.068	-0.001	0.011	0.831****	1.000	-0.061	-0.035	-0.074	0.110*	0.075
	#SURV3	0.020	-0.099	-0.104	0.033	-0.061	1.000	0.447****	0.762****	-0.044	-0.100
	MSURV3	0.147	-0.243*	-0.253*	-0.039	-0.035	0.447****	1.000	0.762****	-0.106	-0.128*
	MWSURV3	0.018	-0.171	-0.106	-0.036	-0.074	0.931****	0.762****	1.000	0.106	0.335****
	#FPSUMA	-0.040	0.185	0.184	0.118*	0.110*	-0.044	-0.159*	-0.106	1.000	0.335****
	MFPSUMA	-0.107	0.145	0.108	0.051	0.075	-0.100	-0.146*	-0.128*	0.335****	1.000
	MWFPSUMA	-0.112	0.183	0.172	0.109	0.114*	-0.065	-0.163**	-0.075	0.775****	0.783****
	#FPMAX	-0.044	0.046	-0.027	0.049	0.074	-0.240****	-0.244****	-0.244****	0.509****	0.146*
	MFPMAX	-0.169	-0.240*	-0.244*	-0.095	-0.064	-0.159**	-0.263****	-0.228****	0.280****	0.581****
	MWFPMAX	-0.125	-0.266****	-0.243*	-0.064	-0.034	-0.240****	-0.265****	-0.221****	0.336****	0.196**
#LIFE'S FERTILITY INDEX	FERTINDX	-0.046	0.061	-0.082	-0.035	-0.118*	0.063	0.057	0.114*	-0.083	-0.090
	#MNTH2	-0.032	-0.053	-0.077	-0.107**	-0.125****	0.129*	0.120	0.151**	-0.084	-0.118
	DESCAT	-0.067	-0.124	-0.134	-0.072	-0.068	0.157	0.099	0.317	-0.350	-0.303
	LOCATION	0.088	-0.209*	-0.196*	-0.001	-0.018	0.154****	0.186****	0.186****	-0.000	-0.057

VARIABLE DESCRIPTION	NAME	MWFPSUM4	MFPMAX	MFPMAX	MWFPMAX	FERTINDX	#MNTH2	DESCAT	LOCATION
LOWEST CHLD #TXMONLEY A	MONLEY	-0.112	-0.044	-0.169	-0.125	-0.046	-0.032	0.067	0.088
#TXMT INDIA,ALL WEST CHLD	#TXMTSM	0.183	0.046	0.240*	0.266****	0.061	0.053	-0.124	0.209*
#TXMT INDIA,ALL ALL CHLDN	#TXMTAV	0.172	-0.027	0.244*	0.243*	-0.082	0.077	-0.134	0.196*
CHILD MORTALITY INDEX	MORTINDX	0.109	0.049	0.095	0.064	-0.035	-0.107**	-0.072	0.001
CHILD MORTALITY INDEX	MORTALTY	0.114*	0.074	0.064	0.034	-0.118*	-0.125****	-0.068	-0.018
	#SURV3	-0.065	-0.240****	-0.159**	-0.240****	0.063	0.129*	0.099	0.154****
	MSURV3	-0.163**	-0.263****	-0.263****	-0.265****	0.057	0.120	0.099	-0.122
	MWSURV3	-0.075	-0.244****	-0.228****	-0.221****	0.114*	0.151**	0.317	0.186****
	#FPSUMA	0.775****	0.509****	0.280****	0.336****	-0.083	-0.084	-0.350	-0.000
	MFPSUMA	0.783****	0.146*	0.581****	0.196**	-0.090	-0.118	-0.303	-0.057
	MWFPSUMA	1.000	0.402****	0.517****	0.438****	-0.088	-0.082	-0.323	-0.085
	#FPMAX	0.402****	1.000	0.223****	0.617****	-0.056	-0.073	-0.022	-0.198****
	MFPMAX	0.517****	0.223****	1.000	0.826****	-0.059	-0.128*	-0.122	-0.060
	MWFPMAX	0.438****	0.617****	0.826****	1.000	-0.015	-0.052	-0.100	-0.008
#LIFE'S FERTILITY INDEX	FERTINDX	-0.088	-0.056	-0.059	-0.015	1.000	0.871****	0.060	0.200****
	#MNTH2	-0.082	-0.073	-0.128*	-0.052	0.871****	1.000	0.075	0.165**
	DESCAT	-0.323	-0.022	-0.122	-0.100	0.060	0.075	1.000	-0.343****
	LOCATION	-0.085	-0.198****	0.060	-0.008	0.200****	0.165**	-0.343****	1.000

NUMBER OF UNITS

VARIABLE DESCRIPTION	NAME	MONLEY	#TXMTSM	#TXMTAV	MORTINDX	MORTALTY	#SURV3	MSURV3	MWSURV3	MFPSUM4	MFPSUM4
LOWEST CHLD #TXMONLEY A	MONLEY	116	108	108	112	111	110	98	116	110	98
#TXMT INDIA,ALL WEST CHLD	#TXMTSM	109	109	109	105	104	109	92	109	109	92
#TXMT INDIA,ALL ALL CHLDN	#TXMTAV	109	109	109	105	104	109	92	109	109	92
CHILD MORTALITY INDEX	MORTINDX	112	105	105	362	360	362	248	302	302	251
CHILD MORTALITY INDEX	MORTALTY	111	104	104	360	360	360	247	300	300	249
	#SURV3	110	109	109	362	360	360	329	263	320	265
	MSURV3	98	92	92	248	247	253	263	263	263	263
	MWSURV3	116	109	109	302	300	360	263	320	320	265
	#FPSUMA	110	109	109	302	300	360	263	320	320	265
	MFPSUMA	98	92	92	251	249	265	263	265	265	265
	MWFPSUMA	116	109	109	302	300	329	263	320	320	265
	#FPMAX	110	109	109	302	300	329	263	320	320	265
	MFPMAX	99	92	92	251	249	265	263	265	265	265
	MWFPMAX	116	109	109	302	300	329	263	320	320	265
#LIFE'S FERTILITY INDEX	FERTINDX	112	105	105	360	360	360	248	301	301	250
	#MNTH2	111	108	108	302	300	329	253	306	306	255
	DESCAT	109	100	100	262	261	329	234	280	280	235
	LOCATION	110	109	109	302	300	329	263	320	320	265

VARIABLE DESCRIPTION	NAME	MWFPSUM4	#FPMAX	MFPMAX	MWFPMAX	FERTINDX	#MNTH2	DESCAT	LOCATION
LOWEST CHLD #TXMONLEY A	MONLEY	116	116	98	116	112	111	100	109
#TXMT INDIA,ALL WEST CHLD	#TXMTSM	109	109	92	109	105	108	100	109
#TXMT INDIA,ALL ALL CHLDN	#TXMTAV	109	109	92	109	105	108	100	109
CHILD MORTALITY INDEX	MORTINDX	302	302	251	302	360	302	262	302
CHILD MORTALITY INDEX	MORTALTY	300	300	249	300	360	300	261	300
	#SURV3	329	329	265	329	360	329	286	320
	MSURV3	263	263	263	263	248	253	234	263
	MWSURV3	329	329	265	329	360	329	287	320
	#FPSUMA	329	329	265	329	360	329	286	320
	MFPSUMA	265	265	265	265	360	265	234	265
	MWFPSUMA	329	329	265	329	360	329	286	320
	#FPMAX	329	329	265	329	360	329	287	320
	MFPMAX	265	265	265	265	360	265	235	265
	MWFPMAX	329	329	265	329	360	329	286	320
#LIFE'S FERTILITY INDEX	FERTINDX	301	301	250	301	360	301	262	301
	#MNTH2	306	306	255	306	360	306	267	306
	DESCAT	280	280	235	280	360	280	280	280
	LOCATION	320	320	265	320	360	320	280	320

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[Women 38-52]

CORRELATION COEFFICIENTS

VARIABLE DESCRIPTION	NAME	MORLEY	#TXHTSM	#TXHTAV	MORTINDX	MORTALTY	#SURV3	MSURV3	M#SURV3	MFPSUMA	MFPSUMA
LOWEST CHLD #T.MORLEY &	MORLEY	1.000	0.478***	0.440***	1.000	0.591	-0.038	-0.076	-0.036	0.087	0.051
#T.HT IN FAV.LOWEST CHLD	#TXHTSM	0.478***	1.000	0.982***	0.188	0.236	-0.013	-0.009	0.010	0.036	-0.143
#T.HT IN FAV.AVE ALL CHLDN	#TXHTAV	0.440***	0.982***	1.000	0.177	0.229	-0.020	-0.016	0.021	0.014	-0.121
CHILD MORTALITY INDEX	MORTINDX	1.000	0.188	0.177	1.000	0.774***	0.236***	0.184**	0.180**	0.207***	0.147*
CHILD MORTALITY INDEX	MORTALTY	0.591	0.236	0.229	0.774***	1.000	0.063	0.034	0.011	0.150*	0.139*
	#SURV3	-0.038	-0.013	-0.020	0.236***	0.063	1.000	0.558***	0.843***	0.026	0.071
	MSURV3	-0.076	-0.009	-0.016	0.184**	0.034	0.558***	1.000	0.830***	0.046	0.114
	M#SURV3	-0.036	0.010	0.021	0.180**	0.011	0.843***	0.830***	1.000	-0.013	0.096
	MFPSUMA	0.087	0.036	0.014	0.207***	0.150*	0.026	0.046	-0.013	1.000	0.440***
	M#FPSUMA	0.051	-0.143	-0.121	0.147*	0.139*	0.071	0.114	0.096	0.440***	1.000
	#FPMAX	-0.069	-0.113	-0.122	0.164**	0.145*	0.065	0.095	0.037	0.845***	0.777***
	MFPMAX	-0.032	-0.189	-0.196	0.111	0.080	-0.184**	-0.283	-0.200***	0.441***	0.213***
	M#FPMAX	-0.114	-0.058	-0.064	0.081	0.074	-0.157*	-0.153*	-0.188**	0.238***	0.532***
WIFE'S FERTILITY INDEX	FERTINDX	0.031	0.089	0.108	0.421***	0.118*	-0.227***	-0.191**	-0.245***	0.305***	0.422***
	#MN102	-0.077	-0.021	0.006	0.017	-0.000	0.277***	0.254***	0.279***	0.243***	0.234***
	SESCAT	0.045	-0.232	-0.251	0.038	0.060	-0.175**	-0.705**	0.180**	0.152**	0.220**
	LOCATION	0.076	0.400***	0.432***	0.144*	0.011	-0.231***	0.689	0.269***	-0.064	0.103
											0.020

VARIABLE DESCRIPTION	NAME	M#FPSUMA	#FPMAX	MFPMAX	M#FPMAX	FERTINDX	#MN102	SESCAT	LOCATION
LOWEST CHLD #T.MORLEY &	MORLEY	0.069	-0.032	0.140	0.114	0.031	-0.077	0.038	0.070
#T.HT IN FAV.LOWEST CHLD	#TXHTSM	-0.113	-0.189	-0.049	-0.058	0.089	-0.021	-0.232	0.409***
#T.HT IN FAV.AVE ALL CHLDN	#TXHTAV	-0.122	-0.196	-0.032	-0.064	0.108	0.006	-0.251	0.452***
CHILD MORTALITY INDEX	MORTINDX	0.164**	0.111	0.092	0.081	0.421***	0.017	0.038	0.144*
CHILD MORTALITY INDEX	MORTALTY	0.145*	0.080	0.072	0.074	0.118*	-0.000	0.060	0.011
	#SURV3	0.065	-0.184**	-0.157*	-0.227***	0.277***	0.175**	-0.141*	0.231***
	MSURV3	0.095	-0.283	-0.153*	-0.191**	0.254***	0.205***	-0.112	0.089
	M#SURV3	0.037	-0.200***	-0.188**	-0.245***	0.279***	0.180**	-0.173**	0.269***
	MFPSUMA	0.845***	0.441***	0.238***	0.305***	0.243***	0.152**	0.094	-0.064
	M#FPSUMA	0.777***	0.213***	0.532***	0.422***	0.234***	0.220**	0.103	0.020
	#FPMAX	1.000	0.413***	0.427***	0.389***	0.228***	0.189**	0.105	-0.077
	MFPMAX	0.413***	1.000	0.228***	0.532***	0.011	0.007	0.180**	-0.249***
	M#FPMAX	0.427***	0.228***	1.000	0.406***	0.104	0.040	0.077	0.053
WIFE'S FERTILITY INDEX	FERTINDX	0.389***	0.532***	0.406***	1.000	0.046	-0.007	0.154*	-0.058
	#MN102	0.228***	0.011	0.104	0.046	1.000	0.774***	0.076	0.236***
	SESCAT	-0.166***	0.007	0.040	-0.007	0.774***	1.000	0.563	0.163**
	LOCATION	0.105	0.189**	0.077	0.154*	0.079	0.063	1.000	-0.331***
		-0.077	-0.249***	0.053	-0.058	0.230***	0.163**	-0.331***	1.000

NUMBER OF UNITS

VARIABLE DESCRIPTION	NAME	MORLEY	#TXHTSM	#TXHTAV	MORTINDX	MORTALTY	#SURV3	MSURV3	M#SURV3	MFPSUMA	MFPSUMA
LOWEST CHLD #T.MORLEY &	MORLEY	70	63	63	66	65	70	54	70	70	56
#T.HT IN FAV.LOWEST CHLD	#TXHTSM	63	63	63	59	59	63	54	63	63	52
#T.HT IN FAV.AVE ALL CHLDN	#TXHTAV	63	63	63	59	59	63	54	63	63	52
CHILD MORTALITY INDEX	MORTINDX	66	59	59	296	293	296	249	296	296	250
CHILD MORTALITY INDEX	MORTALTY	65	59	59	293	293	296	249	296	293	247
	#SURV3	70	63	63	296	293	312	260	312	312	261
	MSURV3	54	54	54	249	249	260	260	260	260	260
	M#SURV3	70	63	63	296	293	312	260	312	312	261
	MFPSUMA	70	63	63	296	293	312	260	312	312	261
	M#FPSUMA	56	52	52	250	247	261	260	312	312	261
	#FPMAX	70	63	63	296	293	312	260	312	312	261
	MFPMAX	70	63	63	296	293	312	260	312	312	261
	M#FPMAX	50	52	52	250	247	261	260	312	312	261
WIFE'S FERTILITY INDEX	FERTINDX	70	63	63	296	293	312	260	261	261	261
	#MN102	65	59	59	293	293	295	248	295	295	249
	SESCAT	66	59	59	296	293	299	252	299	299	253
	LOCATION	50	54	54	261	248	276	232	276	276	233
		70	63	63	296	293	312	260	312	312	261

VARIABLE DESCRIPTION	NAME	M#FPSUMA	#FPMAX	MFPMAX	M#FPMAX	FERTINDX	#MN102	SESCAT	LOCATION
LOWEST CHLD #T.MORLEY &	MORLEY	70	70	56	70	65	56	60	70
#T.HT IN FAV.LOWEST CHLD	#TXHTSM	63	63	52	63	59	54	54	63
#T.HT IN FAV.AVE ALL CHLDN	#TXHTAV	63	63	52	63	59	54	54	63
CHILD MORTALITY INDEX	MORTINDX	296	296	250	296	293	296	261	296
CHILD MORTALITY INDEX	MORTALTY	293	293	247	293	293	293	258	293
	#SURV3	312	312	261	312	295	299	276	312
	MSURV3	260	260	260	260	248	252	232	260
	M#SURV3	312	312	261	312	295	299	276	312
	MFPSUMA	312	312	261	312	295	299	276	312
	M#FPSUMA	261	261	261	261	249	253	233	261
	#FPMAX	312	312	251	312	295	299	276	312
	MFPMAX	312	312	261	312	295	299	276	312
	M#FPMAX	261	261	251	261	249	253	233	261
WIFE'S FERTILITY INDEX	FERTINDX	312	312	261	312	295	299	276	312
	#MN102	295	295	249	295	295	295	260	295
	SESCAT	249	299	253	299	295	299	264	299
	LOCATION	276	276	233	276	260	264	276	276
		312	312	261	312	295	299	276	312

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TABLE 12 -- Fertility Indices, Women in Ife-Ilesa and Lagos Surveys, Nigeria

	By Characteristics of HUSBANDS				By Characteristics of WIVES			
	IFE-ILESA		LAGOS		IFE-ILESA		LAGOS	
	NO.	VARR.	NO.	VARR.	NO.	VARR.	NO.	VARR.
EDUCATION								
(a)No School	450	-0.019	470	-0.010	659	-0.033	1,220	-0.018
(b)Primary	151	+0.050	516	-0.008	107	+0.154	611	+0.036
(c)Some Sec			174	+0.031			249	+0.006
Sec+	55	+0.102	94	+0.124	38	+0.132	54	-0.027
Univ			48	-0.010				
TOTALS	686	+0.006	1,302	+0.005	804	0.000	2,134	0.000)
OCCUPATION								
(a)Traditional	46	-0.250	142	-0.045	551	-0.053	640	-0.005
(b)Housewife					22	-0.494	402	-0.024
(c)Agriculture	484	-0.023			108	+0.090		
(d)Crafts	58	-0.151	(Scored in e,f)		50	+0.230	(Scored in e,f)	
(e)Unskilled	20	+0.363	257	-0.031			16	+0.025
(f)Skilled			354	+0.030			55	+0.078
(g)Sales	8	+1.466	105	+0.015	31	+0.605	117	+0.081
(f)Profsnl	70	+0.414	309	+0.036	25	+0.352	65	+0.089
(TOTALS	804	0.000	1,237	-0.007	804	0.000	1,295	+0.005)
RELIGION								
(a)Traditional	9	-0.356			7	-0.067		
(b)Moslem	235	-0.188			245	-0.054		
(c)Seprtist	120	+0.234			172	+0.002		
(d)Protestnt	316	+0.088			343	+0.101		
(e)Rom Cath	43	+0.076			33	-0.647		
(TOTALS	723	+0.016			800	0.000)		
SOC STATUS SCALE								
(a) Low(1)	285	-0.124	1,207	-0.003				
(b) Low(2)			417	+0.006				
(c) Middle(1)	361	+0.027	234	+0.023				
(d) Middle(2)			98	+0.015				
(e) Upper	66	+0.362	132	-0.008				
(TOTALS	712	-0.002	2,089	+0.001)				

weaning and breastfeeding, marital relations, and so on. It is also our intention to try to develop infant mortality models based on gaps in birth histories, to see if some further insight can be developed on this important question.

VI. INTERPRETATION OF THE DATA FINDINGS

One might argue that what the data show is in fact low infant mortality in this part of Nigeria, supported by the clearly perceived improved child survival chances of the respondents. If this were so, it would give greater emphasis to a rejection of the Child Survival Hypothesis. The writer prefers to think that infant mortality is higher than reported by respondents, though possibly declining with health education in the schools and greater awareness of health and child care measures. Medical facilities in the area do not appear to be an important factor because of the distances involved for most locations, and probably also because of what many members of the Faculty of Health Sciences described to this writer as a low level of organization, morale, and service currently being experienced in the medical facilities, a situation which might be related to low levels of utilization. As noted above, much less than expected relationship has been found between use of medical facilities and distance from the facility, the town sites in general showing little more usage than the remoter villages.

The appearance of higher fertility levels with increasing modernization is found in this area, as it is in other Nigerian studies and in other studies in the developing world. A paper describing this effect in rural Bangladesh appears in the current volume of Population Studies, for example (Stoeckel and Alauddin Chowdhury, 1980). Apparent rising fertility with modernization is sometimes linked to an increase in bottle-feeding and a decline in breastfeeding, young women being introduced to these influences in school, at clinics, in the towns, and so forth. Our data do not give strong support to this inter-

pretation, the median interval between pregnancies being three years up to the sixth pregnancy interval; for the smaller number of women who experienced greater numbers of pregnancies this interval dropped to a median of two years for reasons not clarified in this data. This would seem to conform with the interval reported for this area in accounts going back a number of years and would not suggest an important diminution in this interval, at any rate. Median time for breastfeeding is 18 months, less than the three years reported in earlier literature but the same as that reported by Morley for the Ilesa area during the 1950's and 1960's, suggesting that the breastfeeding period, too, may not be changing as much or as fast as some writers claim. Median age at marriage is 20 years, higher than previously reported when marriages occurred closer to menarche, a factor which would suggest lesser rather than greater fertility.

A better interpretation of the seeming fertility rise in this part of Nigeria, as suggested by the writer in the "Summary" section at the beginning of this paper, is that what may actually be happening is that infant mortality is falling with the introduction of various modernizing influences, that women may in fact be having about the same number of pregnancies (our data would suggest this), and that what is actually increasing is total surviving children.

To give two examples, a mother in past times may have had ten pregnancies, may have had five children die, leaving her with five surviving children. But she tells the demographer that only one child has died. The demographer records five surviving children, one death, total six pregnancies (the demographer thus errs in total live births by 40%).

The same mother has a sister in Lagos who also has ten pregnancies. But she takes her children to clinics and feeds them better food. Only two die. She tells the demographer that one rather than two children have died, and the demographer records eight surviving children, one death, total of nine live births (he is now only off by 10%). And Wow, look at that rising fertility in Lagos!

Where the demographer is really going wrong is that he thinks infant and child mortality is little changed, when in fact this is the major factor. Because he thinks mortality is about the same (he may say it is changing a little) he pays less attention to surviving children and bases his analysis on total live births. In fact, the measure we get most accurately, the one we can see walking around, the one the mother is most proud of and reports to us readily, is total surviving children.

This writer is guilty of basing prior findings on total live births while paying less attention to surviving children, and he knows other demographers who are similarly guilty. Perhaps we should all go back and re-examine our data from this altered point of emphasis. (If the reader will permit, the writer will not repeat the equations given at the begi ning of this paper summarizing this situation, but rather will refer the reader back to this section).

Assuming that we really have this rise at least in total surviving children with each step up the modernizing ladder, up to some lofty point at which our Lagos data show a drop and our Ife data hint slightly at the beginning of a drop, and if the rise is occasioned by falling infant mortality together with the same number of pregnancies, then how does one explain this drop? The implication is that in this ancient traditional society, child-bearing practices must somehow be changing. Again the writer has a proposition to put forward which may explain this change as well.

In almost all family planning KAP studies in West Africa, a flurry of which took place in the 1960's (fewer since), ideal number of children is about six. In our Ife data, the median is six (a very large number, 36%, said "Up to God"; these are left out of the median calculation). For decades and probably for centuries, parents have been having fewer than six children, or at least fewer than six surviving children (ten pregnancies, five deaths, five children surviving, or something like that). Now, with modernization in many parts of Africa, couples are finding themselves with seven or eight : nine surviving

children. We do not know if this means they are now going to start wanting fewer pregnancies, but probably it will mean this, and for some families maybe it already does.

VII. CONCLUSION: POLICY RELEVANCE

A. Population Policy

For population policy at least in this part of Nigeria, the findings suggest that this might be an appropriate time (and one might go on to say the first appropriate time) to initiate a family planning program.

Reasons must be summarized as follows:

(1) Couples in this part of the world now seem to be having more than the desired number of six children, for the first time;

(2) They do not know about family planning, for the most part, but they are nevertheless inventing socially-accepted methods for preventing pregnancy (25% of Husbands in the sample said their Wives were doing this);

(3) They believe child survival chances to be greatly improved in their area (90% of Husnabds and Wives said this);

(4) The Chiefs and Elders are greatly concerned about improving the health of children and mothers, or at least they said so (this has not been mentioned in the report up to now, but was the case). When a link was made between better child-spacing and better health of mothers and children, they stated that they wished to know more about family planning;

(5) Speaking as one who has observed a lack of interest in family planning in Nigeria for the past 20 years, the writer makes the above statements with appropriate trepidation. He takes courage from the fact that the above sequence of conclusions were first enunciated not by himself but by his Nigerian colleagues in the project, upon observing the data.

(6) Strong support for a family planning program in this area, if one is tried, would in fact constitute support for the Child Survival Hypothesis.

(7) The fact that the relation between modernization and fertility may be curvilinear, as suggested in this paper, may account for the fact that the child survival hypothesis is sometimes supported and at other times rejected, in studies in the developing world. In Ife, one can surmise on the basis of our data that effective fertility is on the upward slope at present but may be at the top of this slope, and that the occasion may be present for a downward turn.

B. Research Policy

For reasons stated several times above, the writer recommends demographic surveys which cover fewer people for a longer time, i.e. prospective studies with small samples, which from our experience should obtain much better data, rather than large one-time or retrospective studies which obtain lower quality data. It is important to keep the project small enough so that senior members of staff can check with the field workers every day if possible, at least several times each week. This recommendation applies to research aimed at obtaining data about infant and child mortality, surviving children, live births, and the attitudes and practices of respondents related to these events.

FIGURE 1 -- Scattergram, Child Deaths Per Mother by Weight-Height Index of Present Children, Ife-Ilesa Sample

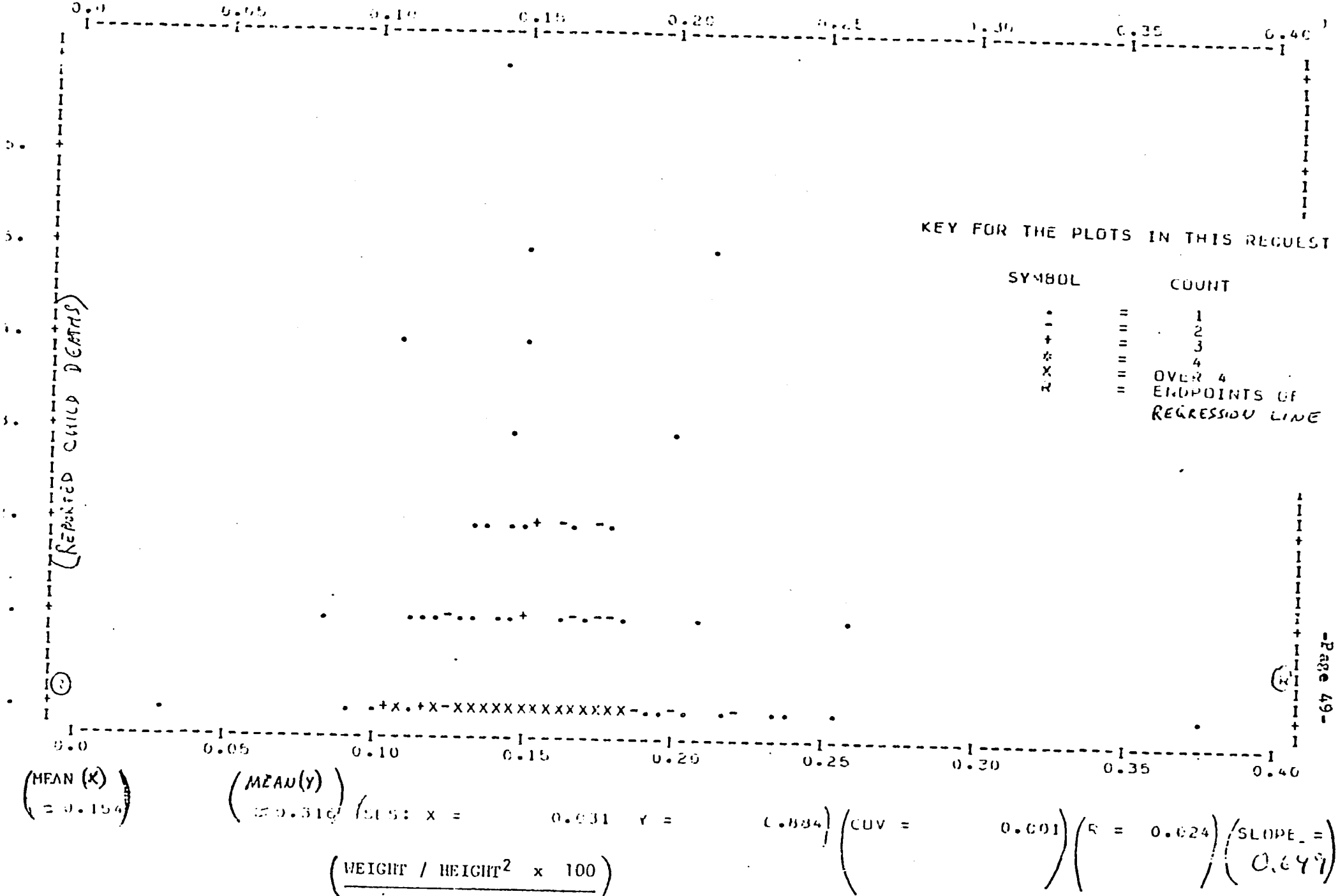


FIGURE 2 -- Scattergram, Total Live Births Per Mother by Weight-Height Index of Present Children, Ife-Ilesa Sample

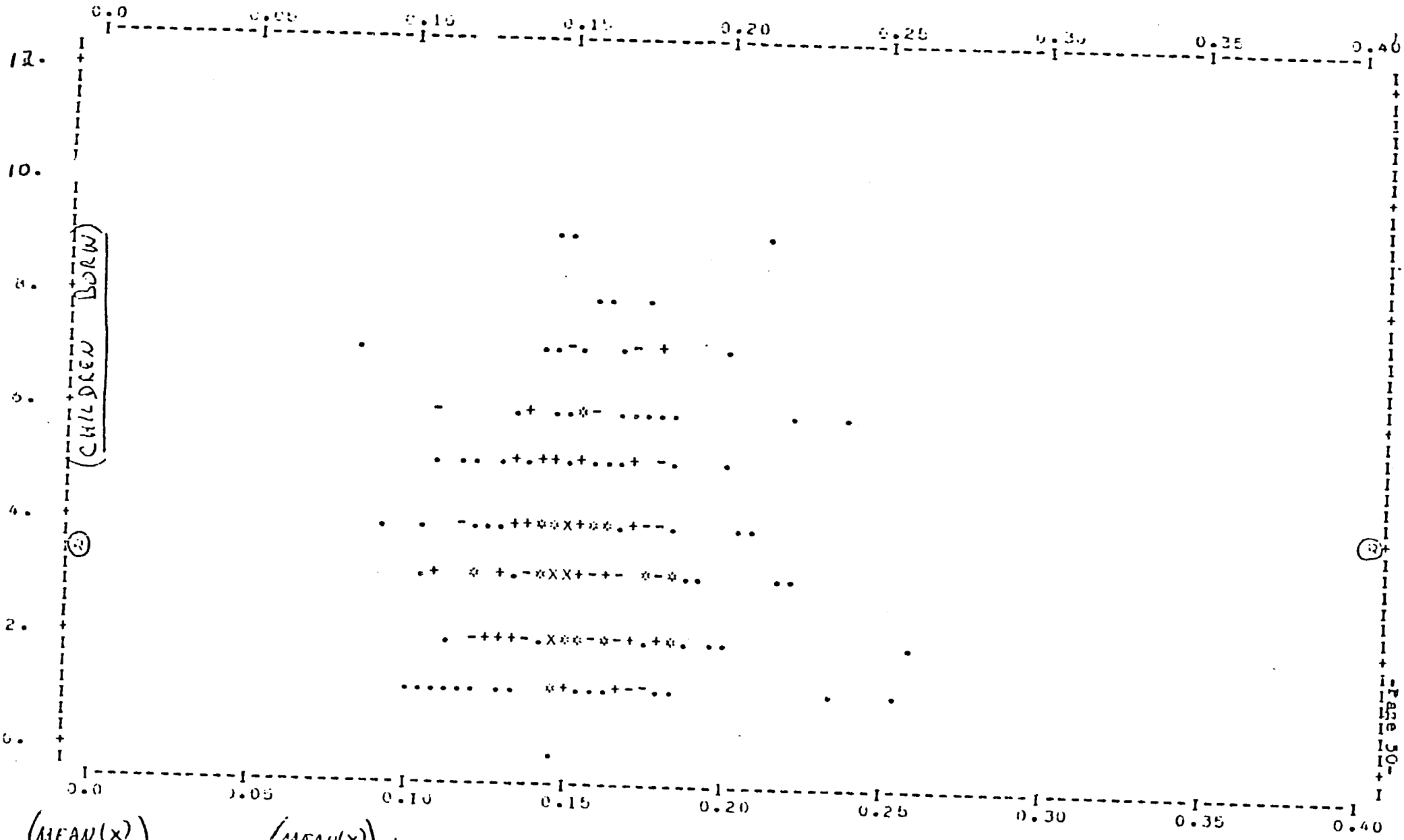
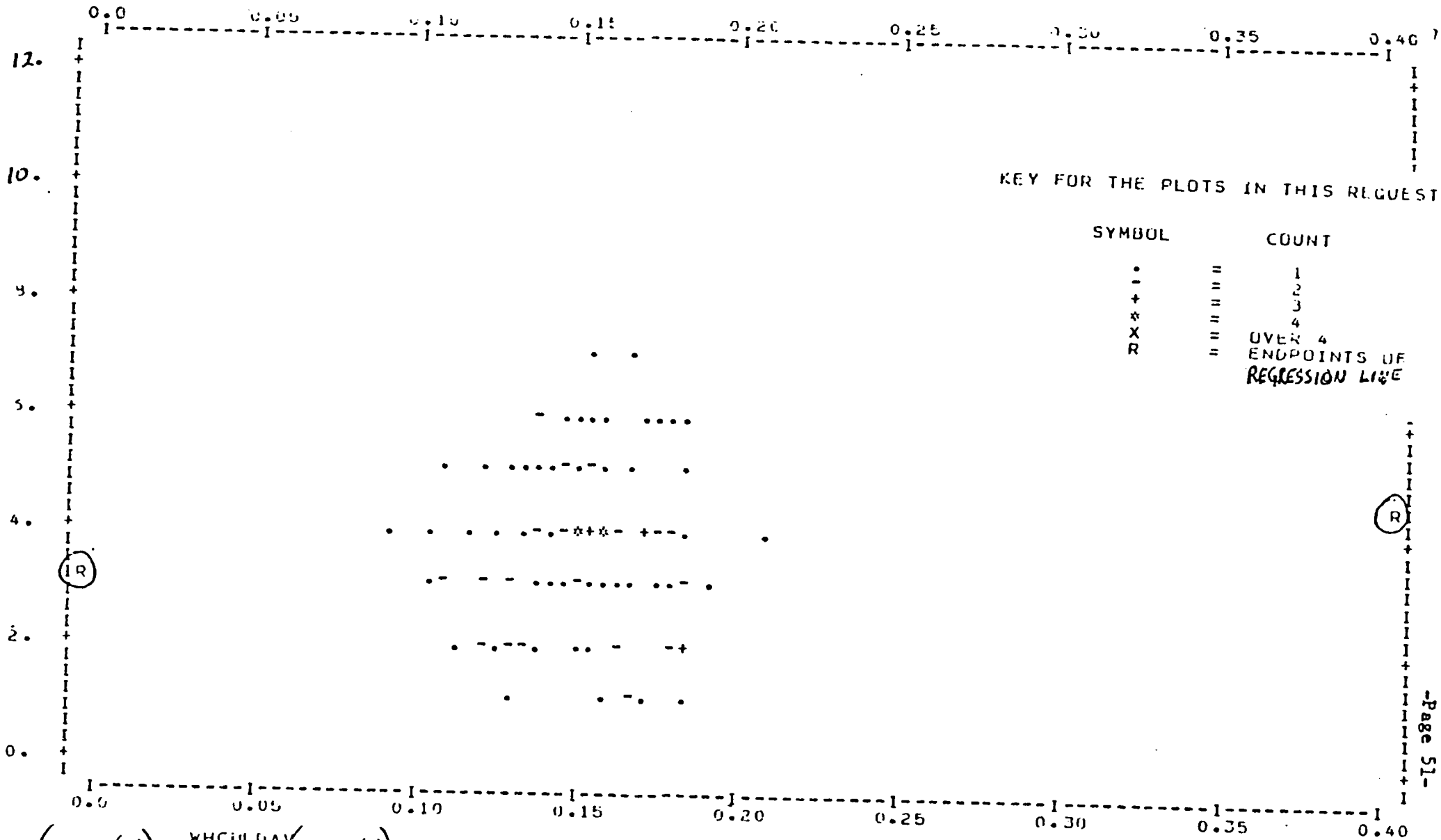


FIGURE 3 -- Scattergram, Live Births by Weight-Height Index, Mothers Aged 28-37, Ife-Ilesa Sample
(Typical of Age-Grouped Scattergrams, Showing Circular Non-Corr. Pattern)



WT./HT.^{2} × 100 (AVE. OF 3 CHILDREN)

FIGURE 4 -- Scattergram, Child Deaths Per Mother by Weight-for-Age Scale Based on Morley Percentiles, Ife-Ilesa Sample

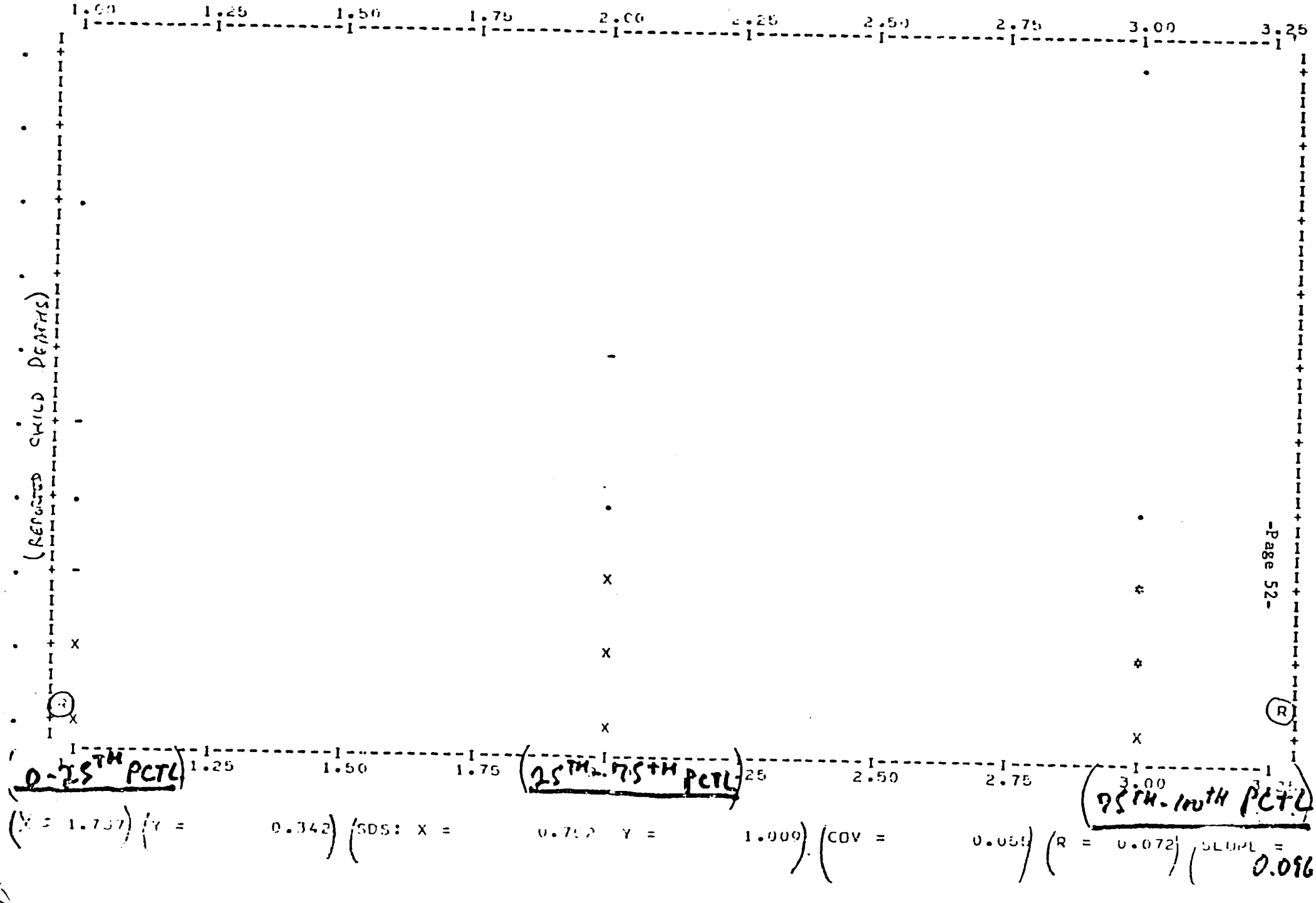


FIGURE 5 -- Scattergram, Total Live Births Per Mother by Weight-for-Age Index Based on Morley Percentiles, Ife-Ilesa

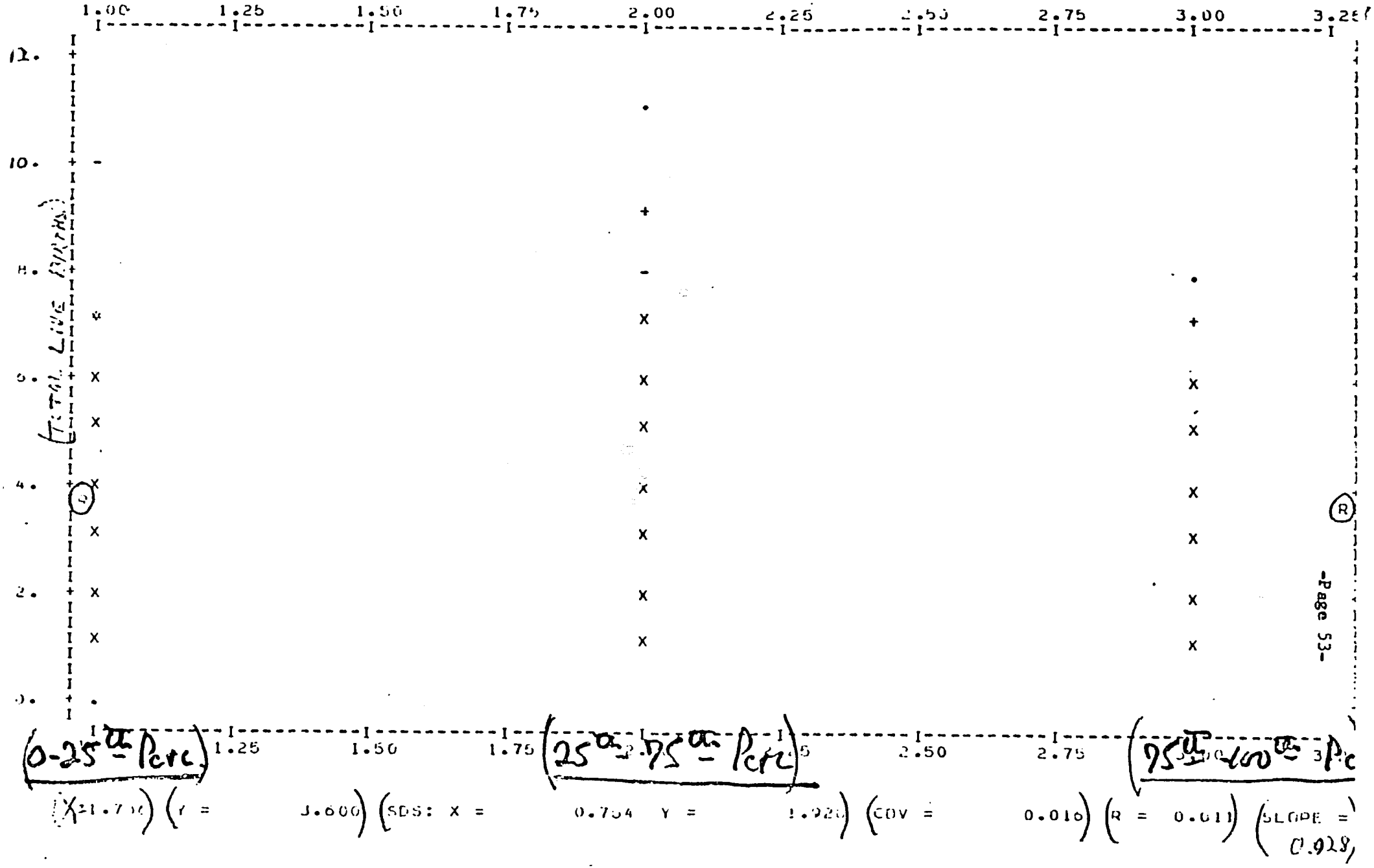
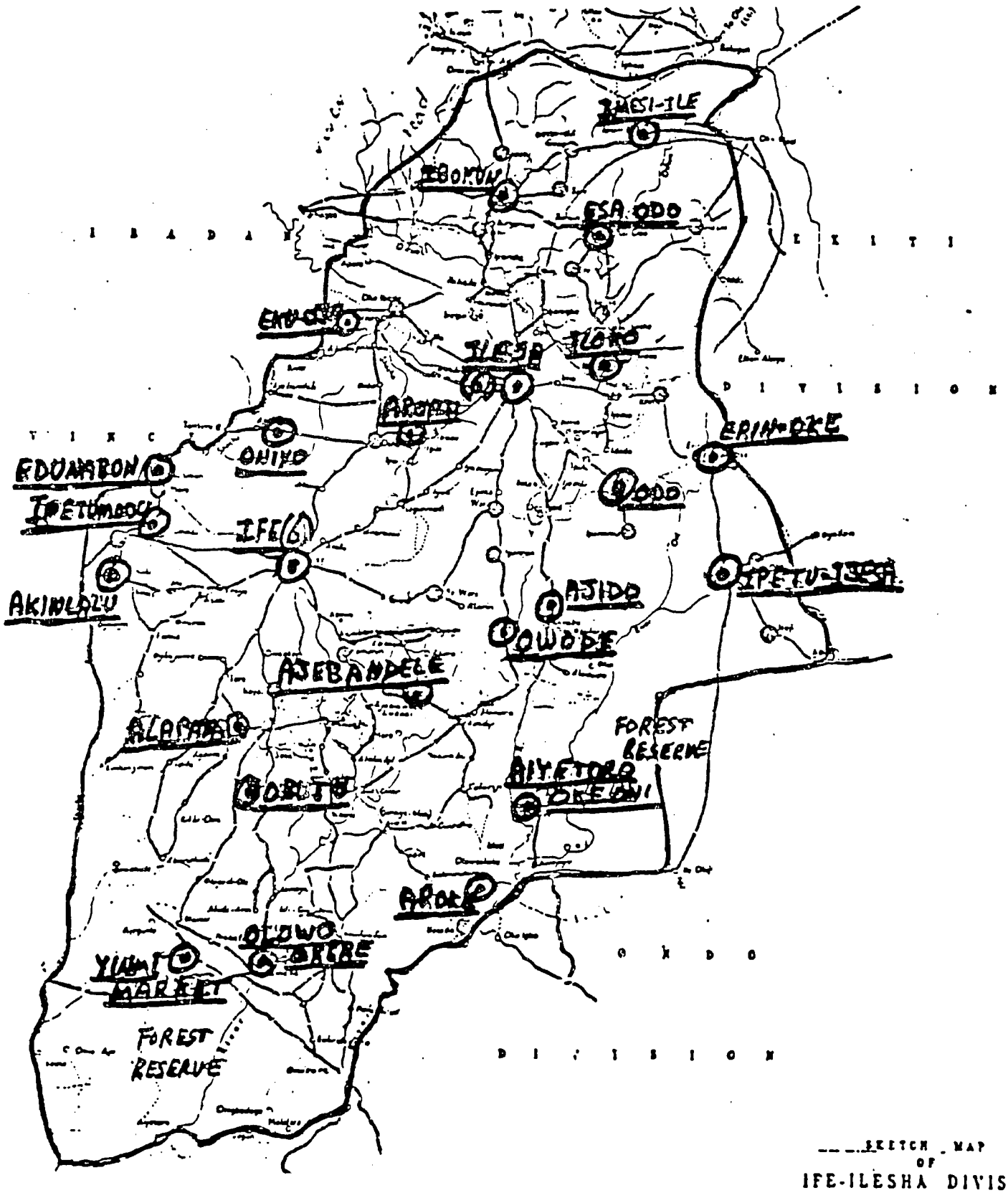


FIGURE 6 -- Map of Ife and Ilesa Divisions, Oyo State, Nigeria, Showing Location of Survey Sample Sites



SKETCH MAP OF IFE-ILESHA DIVISIONS

FIGURE -- Map of Ilesa Town: Showing Distribution of Sample Sites

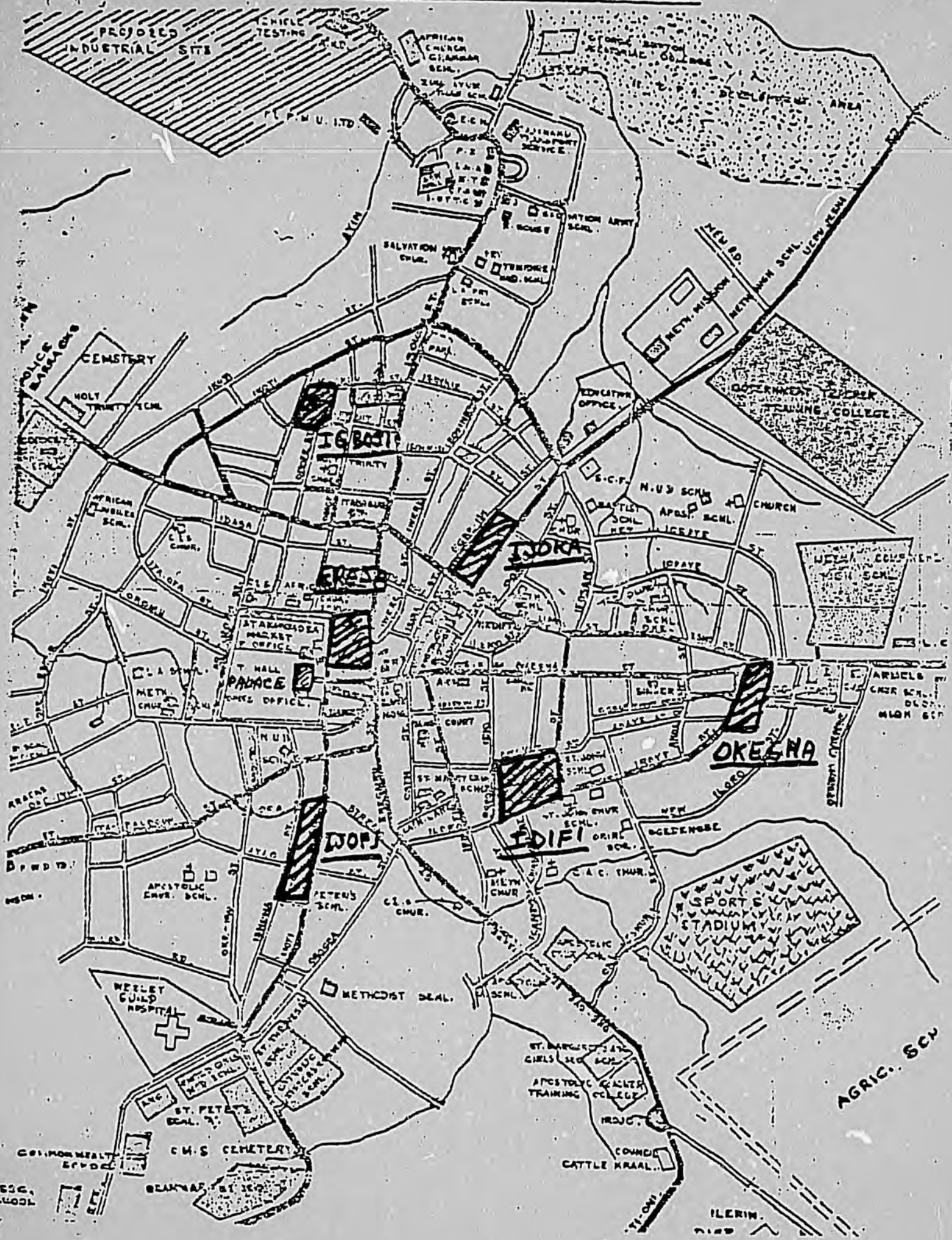


FIGURE 8 -- Map of Ife Town, Showing Location of Sample Sites in Ife and Modakeke