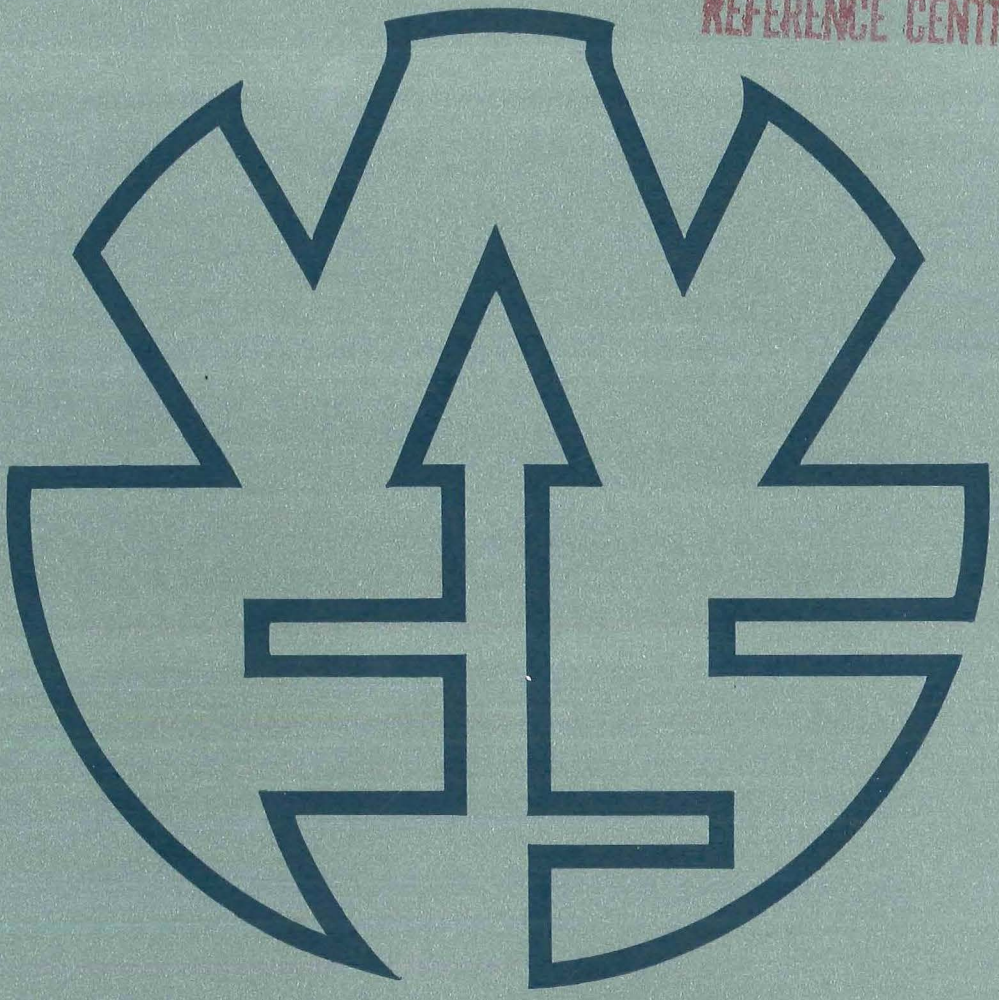
No. 2



J. C. CALDWELL

The World Fertility Survey: Problems and Possibilities

OCCASIONAL PAPERS

NOVEMBER 1973 No. 2

EDITOR Ken Williams

INTERNATIONAL STATISTICAL INSTITUTE
Permanent Office · Director: E. Lunenberg
Prinses Beatrixlaan 428
Voorburg
The Netherlands

WORLD FERTILITY SURVEY
Project Director: M. G. Kendall, Sc. D., F.B.A.
1-2 Berners St.
London W1P 3 AG

The World Fertility Survey is an international research programme whose purpose is to assess the current state of human fertility throughout the world. This is being done principally through promoting and supporting nationally representative, internationally comparable, and scientifically designed and conducted sample surveys of fertility behaviour in as many countries as possible.

The WFS is being undertaken, with the collaboration of the United Nations, by the International Statistical Institute in cooperation with the International Union for the Scientific Study of Population. Financial support is provided principally by the United Nations Fund for Population Activities and the United States Agency for International Development.

This publication is part of the WFS Publications Programme which includes the WFS Basic Documentation, Occasional Papers and auxiliary publications. For further information on the WFS, write to the Information Office, International Statistical Institute, 428 Prinses Beatrixlaan, Voorburg, The Hague, Netherlands.

The World Fertility Survey: Problems and Possibilities

J. C. CALDWELL

Department of Demography
Australian National University

The World Fertility Survey: Problems and Possibilities*

Problems

1 *The nature of the survey*

This paper assumes that the survey will consist of a single round to be held in the mid-1970s. Thus, data over time must be dependent on memory and on a single set of retrospective responses. Fortunately, there still remains sufficient time to select questions in keeping with the needs of new analytical techniques and to re-test these questions in the field. An important point is whether the involvement of governments will restrict the type of question on fertility control that can be asked. The main concern at this stage in methodology should be to ensure that the right questions are asked and that the quality of data is good; certainly, new methods of analysis will continue to evolve parallel to the project provided that the appropriate data are collected.

In this paper, attention will be confined to the core questions to be asked everywhere (or at least in Asia, Africa and Latin America). Thus fertility control questions will be confined to practice, although it is to be hoped that some countries will supplement these with "knowledge" questions.

2 *Some difficulties faced by the survey*

There are two major types of difficulty: first, those presented by the nature of a retrospective survey; and second, those arising from the attempt to achieve global coverage.

Although not a multiple-round survey, two forms of external checking on the survey information are possible. Firstly, at least some countries should be encouraged to match responses with data collections already available (e.g. registration or census data or records compiled by local government, education authorities etc.). This will allow a test of the inefficiency of both systems and the improvement of each. It would also be possible to apply the Chandrasekaran-Deming correction (C. Chandrasekaran and W. E. Deming, "On a Method for Estimating Birth and Death Rates and the Extent of Registration", *Journal of the American Statistical Association*, 44, 245, 1949, pp. 101–115), although evidence is accumulating that the correction is only a partial one because the chance of being left out of one data collection system is highly associated with the chance of being left out of another. Secondly, if it is likely that the WFS will become quinquennial or decennial, some questions should be designed as part of a series. Internal checks should also be carefully built in. One important check is that between the information on the household record form and that on individual questionnaires (i.e. the information on women of reproductive age). In addition, check ques-

* J. C. CALDWELL
Department of Demography
Australian National University

tions can be designed for the individual questionnaires. Often these checks should be well apart, even if referring to the same subject. For instance, the question on births to the woman within the last year might be immediately followed by the check question as to the date of that birth, while later in the questionnaire another question might ask the last birth occurring to the woman and the current age of that child. But the greatest improvement in data, in the absence of the familiarity and trust which often develops in multiple-round surveys, can be gained in a single-round survey only by care, time and repetition. Repetition is important, especially on sensitive questions, because it increases familiarity with the subject and perhaps also gives the impression that the truth must be faced (in the recent Australian Family Formation Survey in Melbourne, the number of women agreeing that they had used certain types of contraception reached, by the fourth approach to the matter, double the level that had been recorded by the first question). Certainly, the fundamental solution to acquiring good data is time, care, a feeling on the part of the interviewers that all questions are vitally important and the maximum rapport between interviewer and respondent. But this requires first-class selection, training and supervision and WFS will have a critical role to play here in setting standards.

The problems of global coverage are probably much greater. In terms of the collection of fertility data and the quality of fertility data that can be collected, the world is very heterogeneous. Some countries undoubtedly have census, registration and survey data already of a quality that is not likely to be surpassed by the WFS In Southeast Asia one could cite Singapore, Hong Kong and West Malaysia. A decision would have to be made as to whether to omit these areas or to include them because the existing data did not allow the use of certain analytical techniques or did not permit fertility to be related to all the WFS socio-economic variables and so precluded some comparisons. Standard socio-economic variables do not mean the same thing in terms of socio-economic status in different parts of the world: the possession of a bicycle indicates wealth in some African countries and poverty in some Latin American ones. Training programmes suited to one country may be completely inappropriate in another; and this may also be true of the type of questions needed to elicit certain information. Probably much more serious is the fact that countries vary in the recent history of change in vital levels: some in Africa have experienced little fertility or mortality change; some in Latin America and Asia have experienced quite dramatic mortality change over the last generation but little fertility change; some in East and Southeast Asia, such as Hong Kong, Singapore, Taiwan and Korea, have experienced substantial fertility declines over the last 5–10 years. These differences raise problems. The Brass methods of analysis are best suited to areas of stable fertility and mortality and they are set out at length in *The Demography of Tropical Africa* (W. Brass *et al.*, Princeton, 1968). Perhaps the major interest of WFS will be changing fertility; yet much of the apparent trends in retrospective fertility data arise from biases in the data and must be subject to correction before analysis. A fundamental problem is the detection of real trends and the withholding of correction (or full correction) from the genuine trends.

Possibilities

1 *Basic data*

The fundamental problem is to collect accurate data on live births over time and by maternal age. A supplementary problem is to establish the reproductive condition of the respondent at the time of the survey.

In theory, reproductive information is as valid for males as females, and, in the area of fertility control, males may provide different or even better information. Nevertheless, in practice, births are much more easily attributable to the mother and fertility control applies to a much more specific age range of a woman. Therefore, WFS will presumably concentrate on females of reproductive years, perhaps 15–49. This is efficient in another sense as well in that most sophisticated techniques of fertility analysis have been developed for such persons. Nevertheless, data must be secured from the whole household in order to provide a base for some rates and in order to examine the children who are the products of the recorded fertility. Cross-checking children in the household against the fertility record is an important aspect of quality control (the checking includes certain identification, agreement on date of birth etc.). It is important that the sum total of households in a cluster should be the sum total of potential persons in that cluster.

There are cogent reasons why all females in the desired age range should be interviewed: in many societies, fertility and fertility control extend well beyond the borders of marriage or of orthodox marriage. However, there are undoubtedly other societies where the interviewing of single women would cause so much offence that WFS might not be able to secure local agreement to it. Interviewing currently married women in any society is unsatisfactory for the calculation of fertility rates in that it excludes once married women (many of them fertile) who have been widowed, divorced etc. At the minimum, WFS should survey all *ever-married* women (this is the recommendation of A. J. Coale in his appendix to the notes and comments on the I.U.S.S.P. Model Questionnaire – see The Population Council, *A Manual for Surveys of Fertility and Family Planning: Knowledge, Attitudes and Practice*, New York, 1970, pp. 2649–52.) Even if interviewing is confined to currently married women, calculated fertility rates will either have to be marital rates, which are unsatisfactory for many purposes, or will have to include in the denominator females who were not cross-questioned about their fertility (one alternative is to classify as "de facto married" every female who has ever had a live birth). Even where the interviewing is confined to ever-married women, problems arise. In many societies it is difficult to agree upon a definition of marriage for survey purposes and it is far more difficult to agree upon definitions which allow international comparison. It is a common occurrence in surveys to under-report the number of married women in a household who are either very young and/or who have never given birth or have no surviving children. When data are being processed, doubts often arise as to whether there has always been a clear distinction between respondents of zero parity and respondents for whom there is no information on parity. WFS should aim at both controls and questions which ensure as far as possible the inclusion of the young and nulliparous and which distinguish respondents of unknown

parity (perhaps indicating the likelihood of such parity being zero if this is believed to be the case).

"Live births" must clearly be the criterion for fertility estimates. This means defining them so that no doubt can arise. It is probably desirable that WFS should collect data on both still births and infant mortality so that the former can definitely be excluded and the latter definitely included in the live births. All possible outcomes of live births should be checked: respondents should be questioned about live births resulting in children still in the household (and this should be cross-checked against the household record), live births resulting in children still alive but living elsewhere (they should be asked where, even if the data are not analysed or even recorded) and live births resulting in children who subsequently died (they should be asked when and at what age). In many societies, the only really satisfactory way of securing good fertility information on births is the continuous or multi-round observation of women to establish whether they are pregnant and later to note whether the outcome of the pregnancy was a live birth. In a one-round survey the nearest equivalent is to end the questions on fertility by cross-questioning the woman as to whether these recorded births do account for every time she was pregnant and, if not, why not (this provides also the possibility of securing, in addition, information on miscarriages and abortions, but it is not the main argument for such a check question).

It is essential to know when the live births occurred, how old the mother was at the time, and what was the order of the birth. The date of the birth, the present age of the child or its age and date of death, the age of the mother at the birth and her present age are all interrelated (this is discussed further below under maternity histories). Therefore, it is possible to attempt the correction of data when they are being prepared for analysis. But, by far the best data are obtained if the interviewer in the field keeps all these things in mind (as well as such other facts as the relative age of siblings) and probes for explanations of inconsistencies. The questionnaire can remind him of this need and carefully designed questions can assist him to do it. In one sense, the problem of maternal ages is no different than the problem of the ages of all persons being surveyed (and hence is treated below) but it should be noted that the interviewers will not have the time to assemble as much information about other members of the household as they will necessarily have to collect about females of reproductive age.

It is argued below that there is a case for collecting some mortality data; but, whether this case is accepted or not, an infant mortality question should be asked as an integral part of the investigation of fertility (but not necessarily in the same part of the questionnaire). Thus, an enquiry should be made as to whether any infant or young child has died in the household (or whether any infant or child of the respondent has died anywhere) during the last one or two years. If one has, its birth should be identified; if the birth was omitted previously but should have been included, it should now be included with a record being kept of this later inclusion and an attempt being made to discover why it was originally excluded. The most difficult infant births and subsequent deaths to discover are those where the mother also died; these linked deaths should be specifically asked about (see comments below on mortality).

In any case, the question about births over the last year or two (and also deaths if desired) should be checked by another question: "When did the last birth (and last death) occur in this household?" Another valuable question is: "When did the last death occur to one of your children?" One can also check on the nulliparous (and also on fertility control) by asking: "Why have you had no children?" Much has been written on "recall lapse", which is the phenomenon of forgetting births or deaths over time and which is supposed to be especially pronounced amongst older women; the Brass method for correcting fertility data incorporates a correction for this. There is a case then for being particularly careful with cross-checking questions for older women, and even constructing some special questions for the purpose, in order both to check the theory of recall lapse and to minimise the effect of such lapse. The current fertility data (and to some extent all fertility data) cannot be understood unless an accurate identification is made of the respondent's reproductive condition at the time of the survey. Respondents may be either pregnant or non-pregnant, and the latter may be in a state of post-natal amenorrhoea or not, and this final group can be divided into the probably fecund and the probably infecund. All conditions bear some relation to fertility performance over the immediately preceding period and all are needed for an analysis of the likely effectiveness of current fertility control practices. The problems of definition are formidable. Few women are certain that they are pregnant during the first month of the pregnancy and even thereafter confusion can easily occur because of the common failure to menstruate for other reasons amongst older women or amongst a wider age range of women in populations suffering from malnutrition or various forms of sickness. Nevertheless, it is important that interviewers ask sufficient questions to determine most of these conditions and are trained to distinguish them. Probably post-natal amenorrhoea is best defined as the period after a birth during which a women is neither menstruating nor pregnant again. It is very useful in much fertility analysis to be able to distinguish the probably fecund from the probably infecund. It appears (in the Australian Family Formation Survey) that judging by objective evidence, there is a high degree of reliability in respondents' own estimates (except amongst older women, and younger nulliparous women) of whether they are probably infecund; this may be less easily done in less literate societies, but, in societies where fertility control is little practised, good objective evidence of probable infecundity is easily obtained (i.e. three years of exposure to intercourse with no anti-natal measures and no pregnancy – this has also been done in the U.S.A. in the GAF studies). In some studies of fertility and fertility control, the problem of the fecundity status of older women is avoided by removing them from the analysis (e.g. the GAF surveys concentrate on women 18–39 years of age in the analysis) but this approach is not desirable in societies where a significant number of births occur to women over forty years of age. Finally, if questions on post-natal amenorrhoea are to be asked, there is a case for asking questions as well on current breast-feeding, intended time of weaning and usual period of breast-feeding, for these are related (probably to different extent in different societies) to post-natal amenorrhoea, and the latter will vary (and, with it, fecundity status) as breast-feeding practices change. These questions will also be related in some societies

to the fertility control practice questions discussed below.
In terms of the age span of respondents, one further important matter should be considered. While it is almost certainly true that practically all births and all worthwhile fertility control pertains to women under fifty years of age, in many societies (e.g. in tropical Africa) substantial numbers of women who are really under fifty give enumerators ages over fifty and are lost to the analysis if they are excluded from the fertility data. Thus, completed fertility is not accurately given by the number of live births averaged by women claiming to be 45–49, for higher averages are found amongst women 50–54 and frequently higher averages still for women claiming to be 55–59 (see 1948 Census and 1960 Post-Enumeration Survey of Ghana). These important facts remain unknown to the analyst and a considerable number of births occurring in the society remain unrecorded unless either the age span is increased to sixty or the births during the previous one or two years to any female member of the household regardless of age are recorded on the household form. Where an older woman does claim a birth, she probably should be given the full fertility interview and perhaps should be assigned an age under fifty; this certainly produces a bias in that, amongst women who have overstated their ages, we are correcting age only for the fertile. Where a downgrading of age is carried out, a painstaking attempt should be made to establish the correct age by other criteria than the recent birth.

2 *Collection of fertility data for the near-current period*
If WFS is to record fertility levels in areas where such levels are already changing, and if the intention is to record different fertility levels in successive quinquennial surveys, then the fundamental measure needed is that of current fertility. Surveys cannot record anything but retrospective fertility but the retrospective period can be made so short that the fertility approximates current fertility.
The usual period selected for such retrospective information is one year. Certainly, one reason is that this provides an annual birth rate. But a more important reason is that many societies exhibit very pronounced seasonality in births and this is overcome by the use of an annual period. If the sample is big enough, the number of births will be sufficiently large to reduce the effect of random error.
But there are other major sources of error. Perhaps the greatest is a failure to understand the length of the one-year reference period. The Brass method of correcting such data (see *The Demography of Tropical Africa*, pp. 89–104) in effect lengthens or shortens the average reference period which has been chosen in error (the use of such a correction necessitates data on births over the last year and live births ever, both by the age of mother).
In practice, of course, it is highly unlikely that nearly all members of a society will err in the same direction about the reference period, but the corrections are based on the average error. Undoubtedly the best ultimate results, irrespective of the corrections introduced into the analysis, can be secured by trying to perfect the reference period. This is the great strength

of multiple-round surveys, where the survey workers themselves may turn up exactly one year earlier (and indeed record the position at that time, thus going much further than merely marking the beginning of the reference period). An obvious solution is to hold the interviews exactly one year after some significant event such as the beginning of the monsoon or the harvest. This is far more difficult than it sounds: the whole survey extends over a considerable period, and in any case the exact beginning of significant events frequently cannot be clearly defined. It is arguable that even a single-round retrospective survey should aim at establishing a signal event in each town or village exactly one year before the survey in that area: a flag-pole could be erected with an intriquing flag; notices could be put up declaring it "the year of the tiger" and babies born during the year could be designated as "children of the tiger"; or the local leader could be provided with gifts to give each baby born after the visit of the emissary – there is some facetiousness here but the case being argued is serious enough.

Even when the reference period is understood, there is often a tendency to push a few more births or deaths into it on the assumption that these occurred such a short time before the period began that the interviewers will want to hear about them. This can be overcome if the interviewers make it clear that they also want to hear about the preceding period; thus, there is a strong argument for asking respondents about births (and deaths) which occurred both within the last year and also between one and two years before.

This approach is also desirable on other grounds. In some societies, deaths fluctuate greatly from year to year and births fluctuate to a lesser extent (births often rising in the year following high infant mortality because of a reduction in post-natal amenorrhoea and in taboos). Thus, a single year may produce atypical results and the least one needs is the possibility of a comparison with the data of the previous year (and perhaps even the year before that). Even where births are being calculated for only one year, the base population is not the survey population, but that found six months earlier. Thus, even where there has been no migration, it is necessary to subtract all births during the preceding six months and to add all deaths.

It might be noted that the Brass method for estimating fertility from survey data is based on two main assumptions: that the most important source of error in the recalled number of births in the year preceding the census is imprecision in the reference period, and that the number of children ever born is reported with good accuracy by younger women. It has no way (as is also true of stable population analysis) of detecting under-reporting of births followed by deaths during the previous year which may mask potentially higher natural increase than the data first suggest; hence the probing questions into births followed by infant deaths are of very great importance. Much depends on the accuracy of fertility reported by young women (most often 20–24 years); there is some evidence from outside the developing world that this age group's reporting is not the most accurate, but in developing countries it may well be if only because the young tend to be much better educated.

Other methods have been developed for calculating fertility levels from limited fertility data in non-contracepting societies, particularly from the number of children ever born to women

by age when no supplementary data on births during the previous year exist (based on the fact that the levels of births exhibited by women in their twenties together with the relative levels in the early and late twenties can determine with a fair level of accuracy completed family size) or from proportions married by age when births by age are not available (see United Nations, *Manual IV: Methods of Estimating Basic Demographic Measures from Incomplete Data*, New York, 1967, pp. 24–25, 33–34, p. 24). It is pointless WFS using these methods if it collects data on children ever born and recent births by age of mother.

3 *Stable population analysis of fertility and the collection of age data*

Apart from the collection of birth statistics from fertility data collected by survey, census population register or registration system, there are two other major sources of fertility estimates in the parts of the world being surveyed: comparisons of successive population counts with some estimate of mortality and, if necessary, migration; and the examination from a single count of the age structure with estimates either of mortality or of the rate of population growth. The former allow a variety of approaches (see United Nations, *Manual IV: Methods of Estimating Basic Demographic Measures . . . , op. cit.*, pp. 7–12, 12–17, 25–28, 39, 40), but it seems likely that the WFS will not have a strictly comparable data source preceding it in the great majority of countries. Two successive counts with adequate age data allow the necessary estimate of mortality as well (by the survival of age groups) and, if migrants are distinguished in each count, an estimate of the impact of migration on population growth. The latter has been made easier by the sets of stable population model tables now available from the United Nations and Princeton (and those which depend on Brass's logit system) (see A. J. Coale and P. Demeny, *Regional Model Life Tables and Stable Populations*, Princeton, 1966; United Nations, *Manual III: Methods for Population Projections by Sex and Age*, New York, 1956; Norman Carrier and John Hobcraft, *Demographic Estimation for Developing Societies*, London, 1971). These are in fact usable for populations which have diverged from stability because of mortality decline but become more difficult to employ when fertility decline has been substantial (for techniques of adjustment see United Nations, *Manuals on Methods of Estimating Population, Manual IV: Methods of Estimating Basic Demographic Measures from Incomplete Data*, New York, 1967, pp. 46–48). One chooses a set of tables that approximates to the mortality or population growth rate level believed to exist and selects the table with the nearest match in age structure (interpolating if necessary). However, the analysis is sensitive to incorrect age data. Random errors can be corrected during processing (although even random errors, if substantial, suggest that much of the age data are rather uncertain). But most errors are systematic; ultimately they arise from the fact that many respondents are not certain of their age, but the systematic element often follows from the method of data collection. The most common method employed to cope with distorted age data is to cumulate stated age to a certain exact age across which it is believed that transfers by misstatement have been at a minimum, and to match the cumulated ages

with cumulated ages in stable population models. Age 15 has often been used, but some African data appear to show that transfers over this age are considerable; one attempt to solve this problem was to work out a series of cumulations to different ages and to take the median fertility estimate (see Etienne van de Walle and Hilary Page, "Some New Estimates of Fertility and Mortality in Africa", *Population Index*, 35, 1, 1969, pp. 3–17).

If age data can be improved, then the use of a good deal of time and of questions is warranted to achieve this. Perhaps the most important way of achieving better age data is for the interviewer to go slowly so as to help the respondent wherever possible. Sometimes, accurate information can be obtained from a relative or other third person. In other cases, the information is available in birth certificates, population registers or other documents and it should be mandatory upon interviewers to ask and search for such evidence wherever possible. Often the respondent's age can be shown to be identical to contemporaries of known age (see J. C. Caldwell and A. A. Igun, "An Experiment with Census-type Age Enumeration in Nigeria", *Population Studies*, XXV, 2, 1971). The use of historical calendars can be of some value but there are great problems in making the calendar local enough in its events and in ascribing ages to dates and events remembered by the respondents. There are dangers in interviewers too systematically using external evidence to allocate ages and indeed in training interviewers about likely relationships between age and such characteristics as parity or marital status. In Africa and parts of Asia a substantial transfer of respondents occurs upwards from the youngest reproductive ages largely apparently because interviewers are sceptical about the youth of any respondents who are married or have children at very young ages. It is debatable whether interviewers should be trained to avoid such errors or indeed whether they should be given much training at all about likely patterns of response. Even where most analysis is to be carried out on grouped ages, the data are apparently better if secured in single years. Little advantage appears to be gained by asking for age in years and months, although, for reasons of analysis rather than exact data, this should be done for persons under two years of age.

Thus, for all analyses, age data are of supreme importance: sufficient time should be allowed, documents should be sought and attempts to identify known age peers should be made. It is wise to secure the information in two different forms: age in years and date (or at least year) of birth. On balance it appears to be best to allow interviewers to draw attention to inconsistencies between the responses to the two questions in case the respondents have merely made a minor slip; but interviewers should not force respondents to make the two answers agree, as other forms of correction may be possible in the processing and analysis stages. It should be repeated here that fertility analysis using stable population models should be supplemented by other evidence; usually the retrospective survey will be expected to secure the best data it can on mortality at least up to five years of age (see mortality section below for suggestions of how this can be done).

In many countries full censuses already held may provide better data for stable population analysis than will the WFS. In these circumstances too much effort should not be expended

on the age data in the household form; but this certainly does not apply to the ages of the females of reproductive years, where accurate data are essential.

With adequate age structure and some knowledge of mortality, reverse survival methods can indicate both birth levels and female or total population numbers at earlier periods, thus allowing fertility rates to be determined. However, if the population has been reasonably stable, there is little reason for favouring this approach over stable population analysis. It has advantages where the population or its birth rates have not been stable because of substantial in or out migration, rapid fertility decline or changing ages at marriage (Coale and Demeny, in *Methods of Estimating Basic Demographic Measures from Incomplete Data*, p. 25, believe the latter may have been sufficiently common in Latin America to preclude stable population analysis).

4 *Maternity histories*

If the retrospective survey is to secure the most complete fertility data, if it is not to be restricted in scope to only a small number of questions, and if adequate training can be given to the interviewers, then there is a very strong case for recording full maternity histories.

Such histories are compiled laboriously by beginning at puberty (not at marriage, although each marriage should be recorded on the way) and recording each successive birth in terms of the name of the child born, the age of the mother at the time, and the date at the time. Mothers should be queried as to whether the birth intervals recorded by subtracting the dates for successive births were the correct ones and should be questioned closely about any suspiciously long inter-birth intervals to see if a birth and a subsequent death really occurred there (and perhaps also to see if resort were being made to contraception or abortion or prolonged post-natal taboos or lactation). It is best if the outcome of every birth is also identified while making this record (i.e. alive and in the household, alive and elsewhere, dead and when died and at what age). Carefully designed questionnaires with proper columns and spaces can help the interviewers.

Inconsistencies may appear in terms of maternal ages and dates, children's ages and dates, and the evidence of who is in the household and what their ages are. Thus the interviewer should watch carefully both the respondent's record and the household record. The best results apparently can be obtained if the interviewer is encouraged to draw the respondent's attention to inconsistencies in order to arrive at the truth. However, there should be no coercion and some inconsistencies may be sorted out during processing and analysis.

Such data can provide cohort analyses of fertility, transverse rates at successive dates (especially age-specific birth rates), data on parity and birth order and the possibility of calculating parity progression ratios, information on closed and open birth intervals, and so on. The data can provide a very valuable cross check on the fertility and mortality data already recorded for the one or two years preceding the survey (the histories should not be the sole source of information and should not supersede the questions on recent fertility and mortality). Some case can be argued for full pregnancy histories which exceed maternity histories in that

they record also pregnancies which did not result in a live birth (i.e. that ended with a miscarriage, abortion or still birth). The advantages are that long inter-birth intervals are often satisfactorily explained; data on abortions for the fertility control section is obtained; and the problem of whether maternity histories should record still births is circumvented. There are probably also advantages merely for the recording of live births: in continuous observation experiments births are more likely to be recorded if it is known which women were previously pregnant, and it seems likely that this is true, although to a lesser extent, in the case of retrospective histories that proceed through pregnancies to births.

Methods are being developed (see W. Brass, "The Analysis of Maternity Histories to Detect Changes in Fertility", *Technical Meeting on Methods of Analysing Fertility Data for Developing Countries*, United Nations Economic and Social Council, Budapest, 14–25 June, 1971) for correcting and analysing data of this type so as to yield specific fertility rates by age of women and birth order for time periods and cohorts. The retrospective data are so complex that they frequently suffer not only from recall lapse but from substantial distortion of period, time and maternal age. In his Budapest paper, Brass experimented with correcting the data by using the cohort measure for the younger women to define the level of births and the recent birth rates to define the pattern. He concluded that the correction was unsatisfactory for the data on which he tried it, but was more satisfied when he attempted to estimate period fertility measures after having adjusted the time scale by using first birth rates. He concluded that further work might lead to "the construction of a simple function to describe timing errors, dependent on a few parameters which can be estimated from the data". It is difficult to avoid the conclusion that world-wide sophisticated fertility analyses, dependent on one-round WFS surveys, will increasingly resort to the analysis of maternity histories and that there are two major needs: first, a good deal of experiment and practice in collecting the best material; and second, the further development of adequate techniques of analysis between now and 1974/75.

The analysis of maternity histories does allow one to examine the development of fertility differentials between the different sections of a population and hence provides the chance of detecting early signs of fertility decline in one or more of them.

Maternity histories are also needed for analysing birth intervals. The period between marriage and the first birth and the periods between subsequent births are known as closed intervals. Usually they become longer as fertility declines (unless the entire decline arises from not having births of higher order while the births of lower order no not tend to expand over the reproductive period) and are well suited to analysis. Lately, it has been argued that a better measure of recent fertility decline (or of the success of a family planning programme) may be the length of the open intervals (i.e. the period since the last birth or, if nulliparous, since marriage) (see Economic Commission for Asia and the Far East, "Study of Fertility Change in Developing Countries Through Analyses of Open Birth Intervals", Budapest meeting, *op. cit.*). The use of closed intervals has drawn attention since the 1950s (see L. Henry, "Intervals Between Confinements in the Absence of Birth Control", *Eugenics Quarterly*, 5,

1958; R. G. Potter, "Birth Intervals: Structure and Change", *Population Studies*, Nov. 1963; M. C. Sheps *et al.*, "Birth Intervals: Artifact and Reality", *Contributed Papers: Sydney IUSSP Conference*, 1967, pp. 857–58) and more recently the literature has recorded an increasing number of articles which also deal with open intervals (M. S. Sheps and J. A. Menken, "On Closed and Open Birth Intervals in a Stable Population", *IUSSP Conference in Mexico City*, 1970; and articles by K. Srinivasan in *Demography*, V, 2, 1968 and VII, 4, 1970).
Maternity histories may also be employed for the analysis of birth order and the related parity progression. The proportion of births of a certain order may well (except in conditions of rapid or fluctuating fertility change) provide an index of the fertility level (see W. Brass, "The Estimation of Fertility Rates from Ratios of Total to First Births", *Population Studies*, VIII, 1, 1954, pp. 74–87; M. A. El-Badry, "Some Aspects of Differential Fertility in Bombay as assessed from Registration Data", *Contributed Papers to the Sydney IUSSP Conference*, 1967, pp. 309–318; W. Brass, "Disciplining Data", *Contributed Papers to the London IUSSP Conference*, 1969, pp. 189–191).
In addition, the histories allow an analysis of infant and child mortality.

5 *Marriage data and its relation to fertility*

In some societies, marriage is difficult to define and the date of formal marriage may differ from the beginning of permanent cohabitation and exposure to the risk of pregnancy. Nevertheless, it is usually possible to define when the latter begin. Advances in the analysis of the proportions changing from a never-married to an ever-married condition (i.e. because of a first marriage) by the age of the female population have been sufficiently striking to suggest that such analysis will be more closely related to fertility analyses and that WFS should collect data at least on age (and, for cross-checking, dates as well) of first marriage (see A. J. Coale, "Age Patterns of Marriage", *Population Studies*, XXV, 2, July 1971, pp. 193–214; and S. K. Gaisie, "Estimating Age Structure of Fertility – Ghanaian Experience", *United Nations First African Regional Conference*, Accra, 1971). There is some case for also collecting data on subsequent marriage, and perhaps type of marriage as well, in that marked fertility differentials have been shown between stable and unstable marriages, monogamous and polygamous marriages, legal and common-law marriages etc.
The real problem here is that WFS will not be able to define marriage for the world as a whole and in some countries the local statistical services will have substantial difficulties even for a single country. Preliminary preparation in the form of field tests and consultation with sociologists and anthropologists would be highly advisable in many societies.

6 *The data required by simulation models in fertility analysis*

Such models will probably be used increasingly to help in the analysis and understanding of WFS data and to predict the results of different population policies (see, for an overall account, Mindel C. Sheps, "Simulation Methods and the Use of Models in Fertility Analysis", *International Population Conference*, London, 1969, I, pp. 53–64; and for specific models,

Robert G. Potter and James M. Sakoda, "A Computer Model of Family Building based on Expected Values", *Demography*, III, 2, 1966, pp. 450–461; J. Clare Ridley and M. C. Sheps, "An Analytical Simulation Model of Human Reproduction with Demographic and Biological Components", *Population Studies*, XIX, 3, pp. 295–308). They may need such data as maternity histories can provide on marriage, births by age, interbirth intervals, length of reproductive period, and infant and child mortality. But they may also need such additional information as only pregnancy histories can provide on miscarriages and abortions. They often need information which WFS may find it hard to provide on the dissolution of marriage by divorce and the death of a husband, adult female mortality, remarriage, age at the onset of sterility and contraceptive practice as well frequently as desired family size, preferred birth spacing and effectiveness of contraception. It is not suggested that WFS should try to meet all these needs. To date, models have thrown little illumination on actual fertility levels in the developing world. In the longer run they will undoubtedly increase our understanding of WFS data but some of the needs listed above will be met by using assumptions based on individual survey findings.

7 *The need for some mortality data*

WFS has apparently already made a decision not to attempt a full coverage of mortality. If an attempt were to be made to collect mortality data as such, then data on orphanage or the decease of the respondents' mothers and fathers should definitely be included so as to allow methods of analysis recently evolved to be employed for estimating adult mortality (see L. Henry, "Measure indirecte de la mortalité des adultes", *Population*, 1960, 3; and W. Brass's Organizer's statement in the "Non-conventional Sources of Demographic Data Session", *Accra Conference, 1971, op. cit*).

However, infant and childhood mortality (possibly up to five years of age) will have to be collected. In general this is because it is difficult and often impossible to distinguish between a certain birth and infant mortality level and a somewhat higher birth and higher infant mortality level. Specifically, the analysis of fertility from age data employing stable population models cannot be done adequately without such mortality data. Earlier work relied on mortality up to the first birthday but now the second birthday is most commonly used and in some societies (perhaps West Africa) it may prove necessary to check results by having mortality data up to the fifth birthday. This is so because some tropical mortality schedules may be quite different from any employed in published models (see P. Cantrelle, "Does a Standard Tropical Mortality Exist?", *Accra Conference, 1971, op. cit.* and P. Cantrelle, "Mortality Levels, Patterns and Trends", in J. C. Caldwell *et al.*, *Population Growth and Socio-Economic Change in West Africa* (in press)). The mortality data will of course be collected by such standard means as asking for deaths in the household by age over the previous year or two years, as well as the last death occurring in the household. But Brass has also presented a method for estimating infant and child mortality by the proportion of dead children amongst those born to women (see W. Brass in *The Demography of Tropical*

Africa, op. cit., pp. 105–122) and hence the need for distinguishing live births by those still alive and those dead (necessary in any case for the adequate collection of fertility data). Extra data, and other possibilities for sophisticated analysis, are presented by the maternity histories if the fate of every live birth is followed and if the age and date at death of every dead child is recorded.

But, in terms of collecting the best possible data, there are other interrelations between fertility and mortality data. For instance, a baby in many countries is unlikely to survive long after the death of its mother. It is also possible that the mother's death will be so memorable that households will forget to report that there was also a baby. Therefore, whenever any female death is reported for the previous year or two, the household should be questioned as to whether there was also a baby and what happened to it (distinguishing between live births and still births). This will also allow an analysis of maternal mortality and of the interrelation between maternal and infant mortality.

8 *Possible additional analysis of data necessary for fertility and fertility control analyses*

Earlier it was argued that WFS must establish criteria for separating respondents into those pregnant, those experiencing post-natal amenorrhoea, those others likely to be fecund and those others not likely to be fecund.

It should be possible to develop at least check methods for converting pregnancy levels directly into current birth rates. Perhaps one-tenth of pregnancies are not reported in surveys, mostly because the recently pregnant are not yet sure of their conditon, but also because of some deliberate underreporting. In addition some pregnancies do not result in births because of miscarriages and abortions. When converting pregnancy levels to annual birth levels, it must also be noted that the duration of pregnancy is less than one year. In two surveys carried out by the writer, the ultimate number of births estimated for the year was about 1½ times the number of pregnancies reported in the survey. An examination of a large number of surveys might suggest a better ratio for estimating the birth rate from the reported pregnancy level in societies with low levels of induced abortion.

Analyses should also be possible of the relationships between the durations of post-natal amenorrhoea and breast-feeding and between each and the length of the closed birth intervals. It should also be possible to relate changes in the fertility level to changes in the proportion of fecund women and hence the potential number of women available for fertility control.

9 *Family planning practice*

There are four basic problems and they are more problems for the survey organisers than for the respondents: (i) deciding on the criteria of population at risk of pregnancy and measuring this population; (ii) deciding what are family planning practices; (iii) measuring the incidence of family planning practice; and (iv) training interviewers so that they collect adequate data and so that there is complete communication between organisers, interviewers and respondents on terminology and practices.

The population at risk has been discussed at some length already. They are those in a current union who are not pregnant, not experiencing post-natal amenorrhoea and not infecund. Nevertheless, there are marginal cases which should be clearly defined and which frequently in the past have not been. For instance, if all women are being surveyed, those not married and not experiencing sexual relations should obviously be excluded from the population at risk. But how should we treat the population within marriage who are not experiencing sexual relations? In the Australian Family Formation Survey (the writer has drawn on this and his West African surveys extensively in these observations) we excluded from the population at risk currently married women who were having no sexual relations for reasons unconnected with fertility control (e.g. medical, emotional or religious reasons) but included those practising continence to avoid pregnancy. In many societies post-natal amenorrhoea is prolonged by lengthy breast-feeding and a decision must be made as to whether and when this becomes a contraceptive practice, firstly when there is no contraceptive intent and secondly when there is such intent. In many societies there is a post-natal taboo on sexual relations (sometimes, but not always, related to the breast-feeding period) which, when observed to the full, may well be employed partly with contraceptive intent. The exact length of such periods is uncertain in many societies and the pressure to follow the taboo to its theoretical limit is not very great and varies from village to town. There is a need to decide when such periods of continence become contraceptive in either intention or effect. Perhaps WFS should establish a fixed post-natal period of amenorrhoea (possibly eleven months – the average period reported in R. G. Potter, J. E. Gordon, M. Parker and J. B. Wyon, "A Case Study of Birth Interval Dynamics", *Population Studies*, XIX, 1, July 1965, pp. 81–96) and state that all breast-feeding and post-natal continence beyond this point is a fertility control measure. One other point should be made about the universe for fertility control analysis. In the United States, for almost two generations, very few births have been attributable to women over 40; hence the GAF surveys concentrated most of their analysis of fertility control on females, 18–39 years of age. This would as yet be inappropriate in most of today's high-fertility societies; yet the inclusion of women, 40–49, in the analysis presents formidable problems in separating the probably fecund from the probably infecund.

In surveys of high fertility countries, it is imperative that the survey organizers should be absolutely clear as to what they mean by fertility control and how the various practices are to be defined and measured; yet apparently only a small minority of surveys have done this adequately. If all anti-natal practices are to be measured, then both abortion and sterilization should be included. Some care should be taken to distinguish completely spontaneous miscarriages from all other forms of miscarriage (in some societies respondents will need to be ensured of secrecy). The various types of female sterilization should be distinguished (there are problems about operations with sterilizing effect which have been ostensibly carried out for other than anti-natal reasons). Sterilization should be counted as an anti-natal measure in the time period in which it occurred, while in subsequent time periods the woman should be classified as infecund and removed from the universe of those who might practise anti-

natal methods. In most societies the sterilization of the husband should be treated in an identical fashion to that of the respondent herself, but this is certainly not true of all societies. Distinguishing mechanical, chemical or hormonal contraceptives is usually fairly simple, although multiple use can produce problems. Analyses which have merely left these in a general multiple-use category have not been very successful, and this is largely true of those analyses which have attempted to list separately the main contraceptive combinations. It is probably best to issue a manual showing in most combinations what is the most effective form of contraception (i.e. a diaphragm smeared with spermicidal jelly with foaming tablets used as an extra precaution would be shown as the diaphragm; rhythm with the pill used to regulate the menstrual cycle would be shown as the pill; jelly with the condom would be shown as the condom). Rhythm or any form of periodic sexual relations should only be classified as contraceptive practice if the respondent has a reasonable knowledge of when it should and should not be practised (a supplementary question will be needed to determine this). Withdrawal, and any other form of coitus where the emission of sperm takes place outside the vagina, should be regarded as an anti-natal method. Surveys can vary very greatly in their reporting of these methods depending on how well they are defined and how prepared the interviewers are to ask probing questions; yet withdrawal has played a critical role in past fertility transitions and may have a significant role to play in some future transitions. Where continence is practised for anti-natal reasons within a marriage (even if the husband is incontinent outside the marriage), it should be listed as a method of fertility control. In some societies the major divergences between the results found by two surveys of the same population is in the extent to which the practice of prolonged lactation and the observance of post-natal taboos are regarded as anti-natal measures (see the debate in *Population Growth and Socio-Economic Change in West Africa, op. cit.* between those involved in the survey work of R. W. Morgan – ch. 9 – and the work of J. C. Caldwell and A. Igun – ch. 3). It is probably unsatisfactory to take contraceptive intent as the criterion, and hence time periods should be substituted – perhaps breast-feeding and continence beyond eleven months; but this does mean that there will be some persons categorized as practising contraception without intending to do so. It cannot be emphasized too strongly that WFS must make clear decisions in this area before entering the field anywhere in tropical Africa or in much of Asia (the notes on the IUSSP model questionnaire are not clear on the treatment of post-natal continence).

Much depends on how the questions are asked. In fully literate societies, respondents can be given a card to read. Even here (as in the Australian Family Formation Survey) the scientific name of every method should be accompanied by all common or colloquial names even if some of these are widely regarded as indecent. Furthermore, each method should be fully described without circumlocution; millions of couples practise withdrawal without ever giving any name to it. The WFS will almost certainly have to read out separately each method with its various alternative names and its full description and respondents will have to be asked each time whether they have practised it; it will be better still if each time this is followed by

the negative question, "Let us be quite clear; is it the case that you have never done so and so?" The key issue is how to measure the duration and intensity of family planning coverage. Many surveys have concentrated on whether methods have ever been used, failing to distinguish between a single use and a thousand uses; possibly the data can be used to measure the likelihood of innovational behaviour but they are useless for predicting fertility regulation. The first problem is to distinguish the period of usage. One solution would be to use three periods: (i) ever used, (ii) used during the last two years (this will be necessary even if fertility is measured only over the last year), and (iii) used over the last month (to give a measure of current use). For currently pregnant women, a question should be asked about use during the month before conception. In societies with a high level of contraceptive use, intensity can often be measured by asking about the main method used, but WFS would be better advised to enquire as to all contraception, as well as to specific forms, whether they had been used during both the two-year and one-month periods and whether the contraception had been used all the time, nearly all the time or only sometimes. A supplementary question may be warranted along the lines, "Do you and your husband ever have sexual relations where no form of contraception is being used?" Probably the best results are obtained by using these questions on duration and intensity in two different sets. The first would refer to any anti-natal practice. The second would refer to specific practices and would identify them. In addition, a third approach would finally be used as a check. All non-pregnant women would be asked to explain their condition, preferably by an exhaustive system of questions of a type now being employed in a research project in Nigeria (J. C. Caldwell and C. Okonjo: project based on the University of Nigeria, Nsukka, involving continuous registration of sexual activity and anti-natal methods). "Have you had sexual relations during the last year?" "How can you explain that you are not now pregnant?" Or alternatively, "Do you think there is any possibility that you will become pregnant?" If not, "Why do you think you cannot become pregnant?" Two supplementary questions should also be asked of pregnant women, "Were you trying to become pregnant when you did so?", "Were you practicing family planning when you became pregnant?"

As fertility begins to decline, the evidence of the role of fertility control methods will become ever more valuable and it is important that questions should be sufficiently detailed and exact in the data they yield at the outset.

Finally, it should be emphasized that good information in this area depends to a very large extent on the thorough training of interviewers and on complete understanding between the organizers and the interviewers and between the interviewers and respondents. Success can only be achieved by overcoming communication problems. Interviewers must be prepared to use all words locally used to describe contraceptives and must use colloquial terms without hesitation and must be able to describe methods easily. They will need a good deal of trial practice before the main survey. The compilation of colloquial terms, especially in a country with several languages, will need a considerable amount of preliminary field work by persons willing and able to achieve a common touch.

Methods for analysing fertility control are increasingly adopting the approach of the life table (see R. G. Potter and J. M. Sakoda, *op. cit.* discussing their FERMOD model) and will need the kind of data outlined above on method (using measures of differential effectiveness), duration and intensity of coverage.

10 *Social, economic and household data*

Sufficient ancillary data of this kind should be collected so as to distinguish sub-groups within the population and to permit studies of differential fertility and family planning practice.

The survey organization itself will note the size of the centre, whether it is urban or rural, the geographical area of the country, the predominant ethnic group and so on. But the interviewers should ask respondents their own ethnic groups, language groups and size of centre from which they originated.

Probably all respondents should be asked their occupations and those of their husbands (at the very least distinguishing farming from non-farming populations) (it is much more doubtful whether income figures are worth anything for intra-national comparisons let alone international ones), their education and that of her husband (certainly in number of years of full-time education and perhaps by levels reached) and possibly the date when education was completed, their religion and that of their husbands, and probably urban-rural background as a child. Other valuable data are those on literacy, type of household (distinguishing nuclear families from more complex types), type of marriage, contact with the mass media, whether the respondent's children go to school and to what age, and their boy-girl preferences. Something might be done with modern objects owned but there are grave problems of international comparison (however, see Deborah Freedman and Paul Demeny, "Additional Questions on Economic Variables for inclusion in KAP Surveys", in *A Manual for Surveys of Fertility and Family Planning: Knowledge, Attitudes and Practice*, The Population Council, New York, 1970).

11 *Some tasks of the central WFS organization*

Much of the above implies a major central role long before the survey enters the field. There will of course be decisions on core questions. More importantly there will be manuals of advice on how these are to be asked and model training manuals. There should be advice on preliminary work to be done and checking that it has been done (e.g. an exhaustive list of local terms for fertility control practices). There is much to be said for some kind of supervisory system of interviewer training courses (including extensive field practice) and of subsequent field work during the survey itself. There also should be a certification system for agreeing that all survey documents are adequate and that all necessary documents exist.

12 *Questions implied by the above discussion*

The discussion above has implied the preferability of certain questions. These will now be

examined with special attention given to the recommendations made in the IUSSP Model Questionnaire for Comparative Fertility Surveys.

MAIN QUESTIONS	SUPPLEMENTARY QUESTIONS	CHECK QUESTIONS
A. Current fertility		
(1) How many births (or babies) have you had over last two years (i.e. in the time since the date exactly two years ago)? (also name of child).	(1a) What has happened to that child now? Is he/she (i) here, (ii) somewhere else (Where. . . .?); (iii) dead? (1b) How old is he/she now (or How old was he/she at death and when did death occur?)	(1x) When did you have your last birth? (also name of child). (1y) How old is that child now? (when did he/she die?)
(2) How many of these births have been in the last year?	(Use replies above)	(Use replies above)
B. All past fertility		
(1) How many live births have you ever had? (List them with names, and mother's age at the time).	(1a) How many of your children are living in this household? (also names). (1b) How many of your children are living elsewhere? (also names and where . . .?) (1c) How many of your children have died? (also names, age at death, date of death).	(1x) Dates of birth of all children alive or dead. (1y) Have you only been pregnant n times? (If not, account for the other pregnancies).

MAIN QUESTIONS	SUPPLEMENTARY QUESTIONS	CHECK QUESTIONS
C. Direct mortality questions		
(1) How many deaths have occurred in this household over the last two years? (Who? How old? Sex?)	(1a) For death of a woman of reproductive years: Was she giving birth to a baby (or pregnant?) (What happened to the baby?)	(1x) When was the last death that occurred in this household? (Who?)
(2) How many of these deaths have been in the last year?		
(3) How many of these deaths have been your children?		(3x) When did your last child die?
D. Pregnancy, fertility, fecundity and fertility control checks		
(1) Are you pregnant now?		(1x) Are you certain you are not pregnant?
(For the nulliparous) (2) Why is it that you have had no children?		(2x) Would you like a baby now?
(For women who have given birth in the previous three years) (3) Have you begun to menstruate again since the birth? (How long after the birth did it first occur?)		
(4) Are you still breast-feeding the baby? (Fully? Partly?)	(4a) When do you intend to wean the baby? (4b) How long do you usually feed a baby? (If breast-feeding a baby) (4c) Do you think (or hope) this will prevent you from becoming pregnant now?	

MAIN QUESTIONS	SUPPLEMENTARY QUESTIONS	CHECK QUESTIONS
(5) Are you and your husband having sexual relations again yet? (Fully? Less than usual?)	(If no sexual relations) (5a) Why aren't you having sexual relations? (5b) What would be wrong with you having sexual relations?	
(6) Have you any reason to think you might not be able to have another baby? (Perhaps more inclusive as: Have you any reason to think you might not be able to get pregnant again?)	(6a) What is the reason?	

E. Pregnancy (or maternal) record

As for the IUSSP Model Questionnaire *(A Manual for Surveys of Fertility and Family Planning. . ., op. cit.*, pp. 2a–11), with instructions (and an extra column) for probing questions for any birth interval longer than two years.

F. Marriage record

As for the IUSSP Model Questionnaire *(A Manual for Surveys of Fertility and Family Planning. . ., op. cit.*, pp. 2a–12), with two extra columns: one for enquiring whether it was a polygamous marriage and the total number of simultaneous wives; and the other for asking the difference in age between husband and wife at the time of the marriage.

G. Anti-natal practice

(1) Have you used any of the following (read each separately) methods to try to stop becoming pregnant or having a baby, or has your husband used any of them within your marriage? (Ask separately if they have ever used them; and, if so, go on to use in the last 2 years and then the last month – in each case enter N = never, S = sometimes, F = frequently or nearly all the time, A = all the time). Fill in the columns for the four methods employed most commonly; if more than four, add extra notes.

(2) Have you or your husband (in the marriage) used *any* method for stopping you getting pregnant or having a baby? (Check against specific methods tables).

Tables

(1) Specific methods (four separate tables with a space above each to name the method) and several lines after the last to list 5th plus methods.

(2) All practices (one table).

Name of practice / Period	(1) *Specific practices* (i)	(ii)	(iii)	(iv)	(2) *All practices*
Ever					
Last 2 years					
Last month (or month before pregnancy, if pregnant)					

Intensity of practice: N = never, S = sometimes, F = frequently or nearly all the time, A = all the time.

Notes on 5th+ methods .....

List of Methods

From IUSSP list (pp. 2b–31):

Abstinence (continence)
Rhythm (safe period)
Withdrawal (or other methods where sperm is not deposited in vagina)
Douche
Breast feeding (beyond 11 months – this differs from IUSSP which measures by intention)
Condom
Diaphragm, pessary or cervical cap
Foam, jelly or cream
Suppositories
Tampon or sponge
IUD, Grafenberg and Ota rings
Pill
Injection
Female sterilization – specifically for anti-natal reasons
– as a result of an operation for other reasons
Male sterilization
Implants or other modern methods

Not included in IUSSP list:

Post-natal abstinence (over 11 months)
Substances taken by the mouth (other than orals – specify what they are. . .)
Charms, magic, spells etc.
Abortion – with a qualified doctor
– induced by person other than doctor (specify which)
– self induced
(*Note:* abortion is listed "all the time" if every pregnancy during the period is terminated this way.)

(3) Finally run through each method asking the check question: Are you certain you have never used this method?

MAIN QUESTIONS	SUPPLEMENTARY QUESTIONS	CHECK QUESTIONS
(4) (Pregnant women only) Were you trying to become pregnant when you became pregnant?		(4x) Were you doing something to try to stop yourself from becoming pregnant when you became pregnant? (What?. . . .)
(5) (Pregnant women only) Were you practising family planning when you became pregnant? (What?. . . .)	(5a) Why do you think you became pregnant?	
(6) Do you and your husband ever have sexual relations where no form of contraception is used? (Distinguish those using rhythm)		
(7) (Non-pregnant women only) Why are you not pregnant?		
(8) (Non-pregnant women only) Do you think there is any possibility of you becoming pregnant?	(8a) If "no" for (8) Why not?	

H. Social data

ESSENTIAL	ADVISABLE	OPTIONAL
Urban or rural	Size of centre	Predominant ethnic group
Occupation (respondent and husband)	Geographical region	Language group
	Ethnic group	Income
Education in full-time years (respondent and husband)	Size of centre of origin	Date full-time education completed
	Type of household	Urban or rural background as child
Religion (respondent and husband)	Type of marriage	Literacy
		Contact with mass media
		Whether respondent's children go to school

There is a case for adding to the above (although not really social data) questions on ideal family size, extra children wanted and boy-girl preferences.

13 *Observations*

The IUSSP Model Questionnaire does provide an excellent model for surveys of this type (although it includes questions on knowledge and attitudes which WFS will apparently not employ to the same extent). However, in this paper I have argued for the inclusion of various supplementary and check questions, and for information being sought by direct questions even if it is also gathered in pregnancy or maternal histories.

The WFS will succeed or fail not by the data it seeks to collect nor by the sophistication of the analysis but by the correctness of the answers to its questions. In many developing countries, questions have to be asked again and again in a one-round survey before the position is ascertained for nearly all respondents.

Hence, if there is a choice between affording a larger sample on one hand and asking more repetitive and cross-checking questions and using interviewers with more field training and experience on the other, there is a strong case for adopting the latter option. The anti-natal practice questions can be asked of a sub-sample of the original sample without any great loss.

WORLD FERTILITY SURVEY

OCCASIONAL PAPERS

1.	Fertility and Related Surveys	William G. Duncan
2.	The World Fertility Survey: Problems and Possibilities	J. C. Caldwell
	World Fertility Survey Inventory: Major Fertility and Related Surveys 1960–73	
3.	Asia	Samuel Baum *et al*
4.	Africa	
5.	Latin America	
6.	Europe, North America and Australia	
7.	The Study of Fertility and Fertility Change in Tropical Africa	John C. Caldwell
8.	Community-Level Data in Fertility Surveys	Ronald Freedman
9.	Examples of Community-Level Questionnaires	Ronald Freedman
10.	A Selected Bibliography of Works on Fertility	György T. Acsádi
11.	Economic Data for Fertility Analysis	Deborah S. Freedman (with Eva Mueller)
12.	Economic Modules for use in Fertility Surveys in Less Developed Countries	Deborah S. Freedman and Eva Mueller
13.	Ideal Family Size	Helen Ware
14.	Modernism	David Goldberg
15.	The Fiji Fertility Survey: A Critical Commentary	M. A. Sahib *et al*
16.	The Fiji Fertility Survey: A Critical Commentary–Appendices	M. A. Sahib *et al*
17.	Sampling Errors for Fertility Surveys	L. Kish *et al*
18.	The Dominican Republic Fertility Survey: An Assessment	N. Ramírez *et al*
19.	WFS Modules: Abortion · Factors other than Contraception Affecting Fertility · Family Planning · General Mortality	WFS Central Staff

N.V. DRUKKERIJ TRIO • THE HAGUE • THE NETHERLANDS