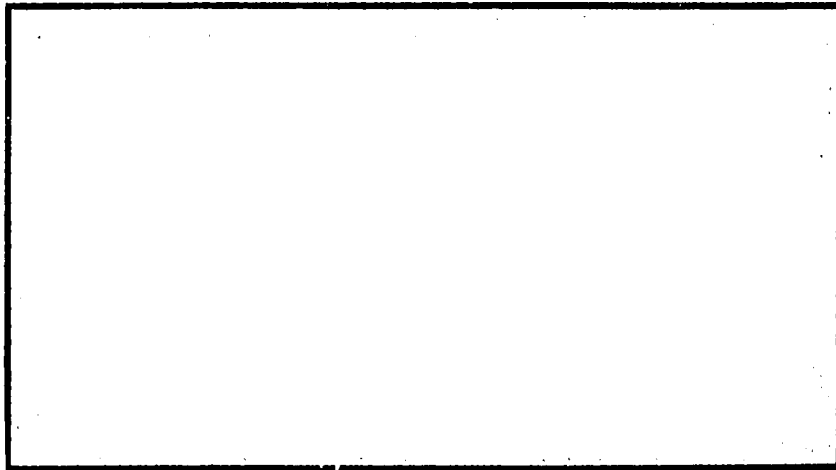


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AN EVALUATION OF THE NAS PROJECT,
"COMPILATION AND ANALYSIS OF POPULATION DATA,"
COMMITTEE ON POPULATION AND DEMOGRAPHY
NATIONAL ACADEMY OF SCIENCES
(Contract No. AID/pha/C-1161)

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AUTHORS' NOTE

This amended report does not contain a review of the achievements of the project since October 1980, when the first report was submitted. In general, however, those achievements would conform to expectations. For the official record, the attached draft differs primarily in the omission of the rather lengthy technical appendix which was submitted with the earlier report.

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I. INTRODUCTION

I. INTRODUCTION

At the request of the Office of Population, the U.S. Agency for International Development (AID), the project entitled "Compilation and Analysis of Population Data" (No. AID/pha/C-1161) was evaluated. The contract, which originally covered the period April 15, 1977 - April 14, 1980, was later modified and extended to June 30, 1980, and then again to December 31, 1980. Formal arrangements for the evaluation were made by the American Public Health Association (APHA) according to its agreements with AID. The individuals responsible for the evaluation were:

Dr. Josefina J. Card, American Institutes for Research,
Palo Alto, California

Professor George J. Stolnitz, Indiana University,
Bloomington, Indiana

Professor Dudley Kirk, Stanford University,
Stanford, California.

The members of the evaluation team met in Washington on April 25-27, 1980, for a briefing by personnel from APHA, AID, and NAS, and to peruse documents in the NAS files.¹ In addition, they received copious quantities of draft reports, draft manuals, minutes of meetings, semi-annual reports to AID and other relevant papers for study at home. During the evaluation, the team read the major documents and reports that had been produced by the project by the end of April 1980. The team met at Stanford on June 25 to consult on the preparation of the report.

During the debriefing in Washington on August 18, it became apparent that the evaluation team lacked some essential documentation. This and up-to-date information on the project were supplied. The report was subsequently rewritten and considered by the members of the Committee on Population and Demography at a meeting on September 29-30. A written "Response," dated October 7, 1980, was submitted. Although these comments have been considered in the present, final version, they have not greatly changed the report. In the team's view, differences in the main body of the report are primarily matters of professional judgment and emphasis, not of fact.

¹ The evaluation team is grateful to Dr. Robert Lapham, staff project director, for an unusually lucid description and analysis of the project to that date.

The evaluation team did not deem it necessary to interview representatives of other agencies engaged in closely allied projects funded by AID, since two of the members had recently served on committees evaluating AID grants to the Bureau of the Census ("Compilation and Analysis of Population Data," Project 932-0649) and to the East-West Population Institute ("Demographic Data Collection in Asia," Contract No. AID/DS/PE-C-0002).

The team did not receive formal Terms of Reference. At the briefing in Washington, it was understood that the team was expected to:

- evaluate the progress and quality of work with respect to contractually-agreed outputs;
- assess the project with respect to the contractor's request for an enlarged scope of work, a longer period of performance, and additional funds;
- advise AID on the effective use of project reports; and
- advise AID on future directions in related areas.

The members of the team felt most competent to deal with the first two tasks. Adequate treatment of the other tasks depended in part on the project's success during the nine-month extension (to December 31, 1980) of the period of performance.

The future of the project was intimately related to the later three-year contract between AID and NAS that concerned determinants of fertility. This contract has already largely determined the major interests of these agencies in further work of mutual concern. This report therefore emphasizes progress of and prospects for work already commissioned in the earlier contract and modified by the amendments of July 28, 1978 and September 28, 1979.

II. CONCEPTION OF THE PROJECT

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Background

The NAS project was conceived as a response to a perception by AID in 1977

. . . that the time was ripe for a detailed review of levels and recent trends of fertility and mortality in the developing world. Although most people in the demographic community agree that mortality has declined in almost all developing countries during the last 30 years, there is uncertainty about more recent changes in mortality in some countries, about current levels of fertility, and about the existence and extent of recent changes in fertility.¹

The extent to which population policies, in some cases assisted by AID funds, may or may not have induced fertility declines was clearly a matter relevant to AID policy. AID had at hand a number of country profiles and general compilations by the Bureau of the Census, but it felt that the Bureau, because of its requirements for universal coverage, was not always in a position to use the most recent data and the most advanced methods of demographic analysis available. There was disagreement among the agencies about the extent of fertility declines, if any, in several important less developed countries. Guidance was needed in obtaining better sources of data and in assessing the usefulness of the most advanced methods of demographic analysis in settling disagreements.

Reasons for Expected Contributions

The demographic profession had indeed made dramatic progress in estimating fertility levels and trends in the absence of reliable official vital statistics, a phenomenon almost universal among less developed countries. Estimates of standard parameters of fertility are now frequently obtained by indirect methods from census and survey data. These have usually been given deceptively precise values in single-point estimates of crude birth rates and other measures of fertility, with no allowance for probable margins of

¹ See, for example, the Committee's report, Fertility and Mortality Changes in Thailand, 1950-1975, p. xi. See also AID Project Paper, Compilation and Analysis of Population Data, 1977, p. 33.

error. Estimates of measures of mortality, such as expectation of life at birth, have also been made possible for many countries, for example, by using model life-tables assumed to apply in the absence of reliable empirical information. Here again, the results are certainly not as exact as they seem. Nevertheless, they provide a remarkably expanded picture of basic fertility and mortality levels and, to an extent, of trends in most countries. These are now available in a number of international compendia. AID had reason to hope that the use of advanced methods of indirect estimation would give more accurate and definitive answers to questions on fertility and mortality trends in 1977.

Apparently, it was AID's expectation that estimates of an organization with the prestige of the National Academy of Sciences, which were prepared by leading demographers using the latest indirect estimation techniques, would be more authoritative than those estimates on fertility and mortality trends that were hitherto available. Overlap with other projects, for example, with worldwide country reports by the Census Bureau and with analogous reports by the East-West Population Institute on countries in the Asia-Pacific region, was therefore not regarded as repetitive. It was hoped that a "blue ribbon" committee, appointed, operating, and publishing under the imprimatur of the NAS, could go far to settle ongoing debates and dispel uncertainties about recent fertility levels and trends in less developed countries. It was also assumed that a committee of leading demographers would be highly qualified to prepare relevant studies or manuals on such matters as data collection and demographic analysis using advanced techniques.

III. PROJECT MANDATE: DESCRIPTION OF THE CONTRACT

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At the request of the Agency for International Development, the National Academy of Sciences undertook a project on the compilation and analysis of population data that was to be financed by AID¹ during the period April 15, 1977 - April 14, 1980. The initial contract called for compensation of \$733,248 for the three-year project. As was noted in Chapter I, the contract was amended twice and the period of performance was extended to December 31, 1980.

The stated objective of the project was:

. . . to assess the reliability and validity of demographic data. This work will be focused on the demographic situation of countries for which recent population totals and growth estimates have varied; and the recommendation of appropriate techniques for the explication of data about which there is considerable uncertainty. (Contract, p. 2)

To accomplish the objective, the NAS was to establish a committee of "no more than 12 internationally noted experts" whose work was to "be supplemented by ad hoc panels with specific topics and by expert consultation by individuals and international workshops. . . ." (Contract, p. 2) The responsibilities of this committee would be to:

. . . prepare analyses of current demographic reports assessing the reliability and validity of data resulting from different sources [and] focus initially on those countries for which recent estimates of population and fertility rates have varied as a result of differing sources or methodologies, and in which substantial investments have been made in family planning programs. (Contract, p. 3)

It was left to the Committee to select appropriate countries for study, given these guidelines. In other matters also the original contract was quite general. Thus, the Committee was further obligated to:

. . . develop criteria for the analysis and evaluation of various types of population and fertility data and make recommendations regarding appropriate techniques for the presentation and explication of data about

¹ Contract No. AID/pha/C-1161.

which there is considerable uncertainty [and] when called upon, [to] provide advice to AID regarding assistance that could be rendered to governments desiring to improve their demographic data collection and analytic capabilities. (Contract, p. 3)

Finally, the NAS was committed to:

. . . respond to requests from AID for specific advice on a variety of methodological issues related to its primary tasks. Such topics might include:

- (a) The development of procedures for increasing the coverage, quality, and usefulness of censuses, vital registration, and sample survey data.
- (b) The development of techniques and guidelines for assessing the meaning of observed changes derived from consecutive censuses or sample surveys or a combination of these. Particular attention would be paid to the problem of deriving useful information from defective data.
- (c) The development of procedures for increasing the timeliness of demographic data, especially those relating to fertility, mortality, and migration. (Contract, pp. 3-4)

The Committee chose to interpret its responsibilities in this area as follows:

1. To prepare a report on the state-of-the-art of demographic data collection, and supplement that report with studies on specific topics, including reports on age-misreporting and technical problems in measuring demographic and (especially) fertility trends.

2. To prepare a manual initially designated as a "Simple Manual on Methods for Estimating Fertility and Mortality Levels and Trends with Incomplete and/or Inadequate Data."¹

The formal proceedings of the Committee give little evidence of AID initiatives, or objection to or concurrence on these determinations, although AID personnel were kept fully informed. This is consistent with the usual practice of the NAS of insisting on considerable freedom while drafting and scientifically executing contracts.

The original contract was amended on July 28, 1978, to obligate the NAS to prepare:

. . . intensive demographic reports for selected LDCs. A panel, or working group, consisting of Academy staff, Committee members, and international associates, will be organized to develop estimates of current levels and trends of fertility and mortality for each country under investigation. Panels will convene international workshops to review available data, work on estimates, and prepare the country reports. As much of the analysis as possible will be carried out in the country under study, by host country panel members, with external advice by the Academy staff, Committee members, and consultants.

The following international workshops shall be carried out:

- Workshop #1 - Thailand
- Workshop #2 - S.E. Asia (Philippines or Indonesia)
- Workshop #3 - Site undetermined
- Workshop #4 - Panel/Workshop - Turkey
- Workshop #5 - Asia and Africa Sites (Total of 3)
- Workshop #6 - Western Hemisphere Sites (Total of 4)

These provisions formalized the Committee's decisions on the panel/workshop approach to preparing country or regional reports and required the Committee to carry out 11 international workshops, the specific sites of which were largely undetermined.

It should be noted that no mention was made of any requirement to provide technical assistance. The workshops are described in the contract as a step toward preparation of the country reports.

¹ Summary of Proceedings, Second Meeting of Committee on Population and Demography, November 11-12, 1977, p. 5.

To achieve the objectives, the budget for the project was raised to \$1,156,500.

In a second contract modification, dated September 28, 1979, a more specific list of contract deliverables, chiefly, country and regional reports, is provided. The scope of deliverables specified in the original contract and the subsequent amendments may be summarized as follows:

- To conduct 11 international workshops;
- To produce 20 country reports¹ containing detailed estimates of levels and trends of fertility and mortality, with those country reports relating to Latin America to be produced in both Spanish and English;
- To produce 3 regional reports: for 7 countries in Tropical Africa, in French and English; for 5 countries in West Asia, in Arabic and English; and for 6 countries in Latin America, in Spanish and English;
- To issue 750 typeset copies of each country report and 1,500 copies of each regional report, the exact number of copies to be issued per language to be determined in conjunction with the AID Cognizant Technical Office;
- In response "to requests from AID" (Item 7, Plan of Work) to produce:

¹ The 1979 contract amendment refers to 15 country reports (p. 3) and specifies that "the countries to be included are Thailand, Indonesia, India, Bangladesh, Pakistan, Turkey, Egypt, Tunisia, Brazil, and others to be specified by the Cognizant Technical Office [in AID]. Three regional reports for seven countries in Tropical Africa, six countries in Latin America, and five countries in West Asia will be issued." In addition, the Committee was to "expand the work of the regional panels by producing five additional country reports which will contain detailed estimates of levels and trends of fertility and mortality. Included are Chile, Panama, Bolivia, Costa Rica, and Kuwait, or other countries as necessary." (Contract, pp. 2-3)

- (a) a compilation of the "best and newly developed techniques for estimating fertility and mortality" (i.e., the volume entitled Demographic Estimation: A Manual of Indirect Techniques);¹
- (b) a handbook of ready-to-use computer programs to apply the methods described in the estimation manual; and
- (c) as apparently jointly agreed under Plan of Work, Item 7 of the original contract, a monograph on Collecting Data for the Estimation of Fertility and Mortality.

The contract reimbursement was raised to \$1,436,500 and the period of performance was extended to June 30, 1980. A request to AID for a further "no-cost" extension to December 31, 1980 was approved in June 1980.

The Committee held its first meeting on June 20-21, 1977; thereafter, it met every six months. By the time of the first meeting, a small but highly qualified support staff had been established at the offices of the National Research Council (the action arm of the NAS). On this staff were Robert Lapham (director), Kenneth Hill, and Hania Zlotnick (who joined October 1, 1977). The members of the parent committee and the Washington staff remained the same for the duration of the contract.

The Committee, in its own words, regards itself as undertaking three major tasks:

1. To evaluate available evidence and prepare estimates of levels and trends of fertility and mortality in selected developing nations;
2. To improve the technologies for estimating fertility and mortality when only incomplete or inadequate data exist (including techniques of data collection);
3. To evaluate the factors determining the changes in birth rates in less developed nations.²

¹ In the contract amendment of September 1979 this "task" of the NAS Committee is more specifically described: "(10) The application of the analysis of specified indirect estimation techniques among many countries will be evaluated. Evaluation will be made of the following methods: (a) children ever born/children surviving methods; (b) death distribution methods; (c) intercensal survival methods; (d) comparisons of registered births and parity methods" (Contract, p. 2).

² Listed in the preface to each country report.

Because of the magnitude of the tasks, the Committee chose to concentrate on the first two, deferring the third for later consideration and action.

To implement the first task, the Committee elected to develop a series of country studies, the production of which, in principle, would follow an established order of procedure (see Diagram 1). For two of the first three country studies, those for Korea and Honduras, the procedure was shortened.

To implement the second task, the staff were charged with the responsibility for coordinating the preparation of a manual on estimates of mortality and fertility by indirect methods. A panel was appointed to prepare a report on the state-of-the-art of data collection. Two special reports were commissioned, one on age-misreporting and one on technical problems in estimating trends in fertility and mortality.

It should be clearly noted that neither the members of the Committee nor the members of the panels were paid for the time they spent on project-related work, although expenses incurred for project-related travel and activities were covered. Only salaries for the small project staff, consisting of the study director, Dr. Robert Lapham, two other professionals, and appropriate office support staff, were paid out of contract funds. A few consultants were offered fees to complete special projects (e.g., the country report on Kuwait and the two special methodological reports mentioned above).

Diagram 1

PROCEDURE FOR PRODUCTION OF COUNTRY STUDIES
BY NAS COMMITTEE ON POPULATION AND DEMOGRAPHY

(General Route)

- (optional route: no panel)
1. The Committee chooses countries for study using size of population, availability of demographic data, and existence of uncertainty about fertility or mortality trends as criteria for selection.
 2. A panel of country specialists, including nationals of the country, is formed. The panel is responsible for producing the country report.
 3. The panel meets on several occasions to discuss the content of the report and available data sources and to present and discuss related papers. A workshop in which national demographers participate is held in the country concerned.
 4. In principle, a draft of the country report is written by one or more panel members.
 5. The draft is reviewed generally by the entire Committee, and intensively by at least two Committee members.
 6. After appropriate revision, the report enters the review processes of the Assembly of Behavioral and Social Sciences (ABASS) and the NAS Research Review Committee.
 7. The report is published by NAS under its imprimatur.
-

IV. CONTRACT PERFORMANCE

IV. CONTRACT PERFORMANCE

As of mid-September 1980, the specific contract performance was mixed. The Committee had essentially fulfilled its obligation to hold 11 international workshops. Nine were held and a tenth was scheduled to be held in Colombia in late September 1980. Workshops were held in Bangladesh (46 attendees), Brazil (25), India (31), Indonesia (7), Latin America (43), Thailand (33), francophone Tropical Africa (17), anglophone Tropical Africa (17), and West Asia (30).

Only three country reports had been published (on the Republic of Korea, Thailand, and Honduras) as of mid-September. The major study, Demographic Estimation: A Manual on Indirect Techniques, was nearing completion, but it apparently was not ready for the Committee's final review before it entered the NAS review process. The state-of-the-art study on data collection was, reportedly, to be reviewed by the Committee at its next meeting at the end of September.

The staff are hopeful that many of the outstanding country and regional reports will be in draft form for final Committee review by the end of the contract period (December 31, 1980).¹ However, it is clear that the project is far behind schedule, and it is unlikely that the remaining reports will be completed before the contract expires.²

Country and regional reports apparently were the first concern of AID and the Committee.³ However, in considering project outputs, it should be noted that the published reports and workshops are the results of efforts involving an enormous investment of both paid and unpaid professional time. The unpaid time has included: (a) the semi-annual two-day meetings of the twelve-member Committee, with major review responsibilities for all members and heavy involvement of several members on specific projects; (b) the participation of at least 120 professionals on country panels at at least 28 panel meetings (as of April 1980), usually in the country concerned; and (c) nine country workshops with some 250 participants, chiefly from the countries concerned (a tenth was scheduled to be held in Colombia in late September 1980).

¹ Funds have been set aside to cover the expenses of publication after the contract expires.

² Based on information received by the evaluation team in mid-September, this conclusion seems to be warranted, even in view of the minimal definition of a "completed" draft (i.e., one released by the Committee for post-Committee review by the NAS). If the NAS review phase were added, the shortfall of the project in meeting its schedule would be even more pronounced.

³ See contract of July 18, 1978, as quoted on p. 7.

Many technical papers were prepared for presentation at the workshops. A volume of the papers presented at the ECWA symposium has already appeared. Papers presented at the Bangladesh regional workshop are, it is reported, being published. Some of the papers presented at the workshop in India may also be published. In principle, many of the remaining twenty-odd country reports are being prepared, at least as drafts, by unpaid panel members.

Much of the time of the small, paid professional staff has been devoted to providing time-consuming logistical support for these multitudinous activities. The staff made some 55 country visits of varying duration in the initial three years of the contract, and prepared an impressive number of scientific and expository papers and publications.

As a result of these combined efforts, the NAS has substantially met its contractual obligations to establish panels and sponsor international workshops.

By mid-September 1980, only one of these preparatory steps had been crystallized in a published report, the report on Thailand. The other two published reports (on Korea and Honduras) were prepared without the background on the panels and workshops.

These facts reflect a number of problems. One, the staff have been far more heavily engaged in drafting country reports than was initially envisaged. When added to the staff's other time-consuming responsibilities, this burden undoubtedly explains some of the delays in completing the country reports and the important manual on estimation.¹

Two, the small staff was not enlarged, despite the increased workload assumed by the Committee. At its first meeting in mid-1977, the Committee contemplated a "fairly small number of intensive country studies" (p. 4). By September 1979, it had assumed the imposing responsibility for the reports listed above.

Three, whatever its other possible virtues, the panel/workshop system for preparing country and regional reports led to serious delays in output. The delays have impaired the value of the reports--their timeliness and, presumably, their usefulness for the purposes for which they were originally designed.

¹ According to information given to the evaluation team, members of the staff were assigned the responsibility for writing six country reports and for jointly writing four more. The staff also had responsibility for initially editing and reviewing all draft reports, as well as preparing the manual on estimation.

V. EVALUATION OF CONTRACT PERFORMANCE

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The evaluation team is confronted with a dilemma. As noted above, its primary charge was to assess the "progress and quality of work with respect to contractually agreed output."¹ Interpreted literally, there is little to evaluate; only three of the twenty-plus reports scheduled for completion have been published. The staff and members of the Committee apparently feel that this literal interpretation is unfair in that the project has reportedly been of major educational value in less developed areas. The workshops have been especially educational. But this contribution was not stated as a contract objective. The original contract and its modifications did not require the Committee to provide technical assistance, valuable as this may have been.

The evaluation team has no way to fully evaluate this educational contribution. It is reasonable to assume that there was benefit to the countries concerned and that this was a useful byproduct of the project; apparently, in the minds of the Committee members, it was a central product. Papers presented at two (and possibly three) of the workshops are, reportedly, being published. AID personnel apparently agree on the usefulness of the workshops as both educational and informational enterprises.

As has been noted, the evaluation team had before it only the objective products of the Committee. Three published country reports (on Korea, Thailand, and Honduras), one "in-press" country report (on Bangladesh), the ante-penultimate drafts of two methodological studies (Demographic Estimation: A Manual on Indirect Techniques and Collecting Data for the Estimation of Fertility and Mortality), and the specially commissioned study (Age-Misreporting) were available for informal review. All other work was in the form of either reports-in-progress or collections of workshop papers. These were preliminary drafts, unsuitable for formal review.

Country Studies

A. Estimation of Recent Trends in Fertility and Mortality in the Republic of Korea

This report represents a thoughtful and sometimes innovative attempt to reconstruct Korea's fertility trends between 1955 and 1975. The measures of mortality and the adjusted age distributions for females should

¹ In AID's request to APHA to organize an evaluation it was stated that "a team evaluation is needed for assessing various reports prepared by the panels." See memorandum dated January 24, 1980.

be valuable benchmarks for future work. There are indications of atypically high mortality rates for older males in Korea. Similar trends in other East Asian countries have been identified. These trends are described by one of the authors in a recent issue of Population Studies.¹

The report did not go through every step of the process described above and therefore should not be considered a typical or model country report. It is a specialized and highly technical study of Korean fertility. Limited attention is given to other demographic parameters. In content and approach, it differs substantially from other area reports.²

The report is limited both substantively and in its exposition. What is perhaps most surprising is the extent to which the authors ignore the institutional and historical context of demographic change in Korea. For example, the Korean War is scarcely mentioned. To what extent was this war a factor in the rise of fertility in the late 1950s? How did losses and major migrations during the war affect the age structure, the marriage market, and age-at-marriage? What were the effects of international migration, for example, on age structure? Korea is not a closed society; emigration, especially of young females of reproductive age has been considerable. To what extent does emigration account for the apparent deficit at the ages for which the authors make arbitrary corrections? Does the long delay in the registration of births have any effect on apparent age-specific fertility?

It is not argued here that the authors incorrectly calculated estimates of fertility because they ignored such questions in the report, but that it would have been useful to have discussed these potentially influential factors.

In the exposition, a number of basic parameters are omitted from the text at the simplest level. Nowhere are total populations given for any of the five censuses considered, either as reported or as corrected. Nor are the intercensal rates of growth provided, either as reported or as corrected, for the total population. Such omissions, including the absence of estimates of infant mortality, crude death rates, and natural increase, limit the utility of the report for many readers and somewhat belie the report's title, which includes mortality.

Estimates are not placed in the context of results obtained by other official and private persons who have made serious efforts to analyze Korean fertility and mortality. This, too, is a weakness of the report. What is suggested is a limited target audience of demographic cognoscenti, a fact

¹ Noreen Goldman, "Far Eastern Patterns of Mortality," Population Studies 34(1):5-17, March 1980.

² See detailed comparison of drafts of Korea and Thailand reports by W. Parker Mauldin, Annex 3, Summary of Proceedings, Fourth Meeting of the Committee, November 13-14, 1978.

that should be recognized, though not necessarily deplored. In any case, subsequent reports appear to have been prepared with an eye to a larger readership.¹

B. Fertility and Mortality Trends in Thailand, 1950-1975

This country report is assumed to be more typical than the Korea report. It contains a well organized and comprehensive set of comparisons of alternative levels and trends suggested by different sources and estimating

¹ Special Note by George J. Stulnitz: I agree with these comments as far as they go. However, I believe they should be supplemented because the report gives cause for diverse assessments. On the one hand, the report makes numerous useful technical contributions (e.g., some of the methods used to assess and modify Korea's recent census age distributions and birth registration series). The latest fertility estimates (for 1975) are almost identical with the findings of the 1976 National Family Planning Evaluation Survey. (For whatever reasons, these concurrences were omitted from the present report, though they were known to the Committee well in advance of publication of the report.)

On the other hand, the report has important shortcomings. The omission of key demographic estimates, such as those noted above, is at variance with the coverage of subsequent reports. Given Korea's relative advantages compared to most Third World countries, one cannot attribute this omission to the lack of source materials for making estimates of overall mortality and total population by age and sex. In expository approach and organization, the report is too technically oriented to meet the needs of the Committee's several targeted audiences. This problem could have been avoided if the editors and authors had collaborated more closely.

On more technical matters, the authors do not attempt to allow for variable completeness of enumeration of total population in the recent Korean censuses; thus, the "corrected" female age distributions are the result of arbitrarily simplifying assumptions, and not "best possible" estimates. A key assumption, that differential errors between censuses in reporting children under 5 are independent of differential errors in reporting changing numbers of children ever born, remains untested. Examples of assumptions which are untested or unspecified, whether potentially or clearly questionable, are, unfortunately, not isolated. That the authors do not consider differences between their own findings and those made by the major policy-serving population agencies in Korea seems, to me, to be an unfortunate oversight if unintentional, and a sub-optimal choice of strategy if intentional.

procedures. Commendable emphasis is placed on the evaluation of the merits of different procedures, including a battery of indirect techniques for estimating fertility and mortality.

The alternative estimates of total fertility shown in Figure 1 differ greatly in the values for 1960 and the early 1970s. The different estimates for total fertility decline vary over a range of some 25 percent to 40 percent from the early 1960s to 1975. In other words, the report confirms the reasonableness of quite a wide range of estimates. Estimates of mortality changes are similarly vague. It is stated that the average expectation of life at birth "probably increased by some two or three years between the mid-1960s and the mid-1970s" and that the crude death rate declined from "about 10-11 in the mid-1960s to about 8-9 in the mid-1970s" (pp. 1-3). These and the estimated ranges for birth rates imply a wide range of estimates of natural increase during the period.

The report is to be commended for its scientific caution, but it leaves the reader with the conclusion that the use of sophisticated methodology, in this case, contributes little to what is observed with other, simpler methods of analysis. This last comment is not meant to be a criticism of the method used, but an expression of regret that the report failed to do what one had hoped it would do.

C. Fertility and Mortality Changes in Honduras, 1950-1974

This country report was the work of Kenneth Hill, a member of the project staff. This probably explains its early appearance in print, despite what might otherwise be judged low priority. The justification is that ". . . for reasons of methodology alone the recent demographic history of Honduras seemed worth looking into" (p. 1).¹ A conscientious and intelligent effort was made to examine all available sources and to evaluate each source for whatever reliable conclusions could be drawn. The author experimented with different assumptions on basic parameters (e.g., intercensal rates of growth) and derived what he regards as reasonable results. Unhappily in this case, new and independent techniques of estimation do not seem to have provided much new information or firmer conclusions on the validity of basic demographic parameters. The conclusion of the report is that the birth rate has been and continues to be very high (somewhere around 50 per 1,000) and that there was no clear evidence of a decline by the mid-1970s.

¹ It is also relevant that the author had extensive experience with Honduran data as joint author of the report entitled National Demographic Survey of Honduras (EDENH): Methodology, Results, Indirect Estimates, which was jointly sponsored by the Dirección General de Estadística y Censos de Honduras and the Centro Latinoamericano de Demografía, 1977. See also the Committee's Summary of Proceedings, Second Meeting, November 11-12, 1978, p. 6.

Perhaps the most important contribution of the report is a reasonably consistent series of estimates of mortality levels and changes over time.

D. Bangladesh

A fourth country report, not available in printed form at this writing, was reviewed in close-to-final draft. The report represents an attempt to evaluate numerous sources that are more confusing and contradictory than those in the Thailand study. Predictably, given the unreliability of the census and survey data available, the conclusions are "soft."

Unlike the previous reports, the Bangladesh study contains a brief description of the country and its demographic history. It includes a thorough review of data sources and touches on some topics not covered in previous reports (e.g., the effects of international migration and demographic differences among subpopulations of Hindus and Moslems). The conclusions confirm earlier conclusions that fertility has been more or less consistently high (with sharp fluctuations from year to year in response to natural disasters and political upheavals). Less predictable is the conclusion that infant mortality has stayed erratically high, whereas adult mortality has declined. Recent rates of population growth remain a mystery, clouded by census irregularities and the effects of mass migrations.

E. Some General Observations on the Country Reports

The available country reports are scientifically useful in their application of sophisticated methodology but, with the possible exception of the Korea report, of limited value in adding to previous knowledge of the basic fertility levels and trends in the countries concerned. The evaluation team is not in position to judge the value of forthcoming reports in this regard and recommends that this factor be considered when determining what reports will be given priority for completion. There seems to be no question that, as a group, the forthcoming reports will make a significant scientific contribution in the demonstrated application of advanced methods of estimation in the absence of adequate primary data. However, it remains to be seen whether such methods will lead to results substantially different from those contained in other sources and whether they will provide significant new bases for resolving past disagreements.

AID reasonably hoped that such advanced methods would give answers to the questions on fertility trends with which it was concerned in 1977. However, the slow procedures of the project and the rapidly accumulating evidence of fertility declines led to a substantially changed situation by 1980. Given delayed output and the kind of country reports NAS has produced, the reports have more scientific interest than policy significance for AID.

In view of past delays, the remaining country reports might well address more explicitly the question of how best to splice past trends and present or subsequent developments. The World Fertility Survey conducted in many countries in the last few years has superseded much earlier information on fertility. Several of the countries concerned have taken censuses in 1980 and others will do so in 1981. The results may soon outdate some of the Committee's findings on recent fertility and mortality levels and trends.

Methodological Studies

The second major thrust of the Committee's work has been "to improve the technologies for estimating fertility and mortality when only incomplete or inadequate data exist (including techniques of data collection)."

To serve this function and to meet the requirements of the AID contract, the staff prepared a fairly complete text for an impressive volume entitled Demographic Estimation: A Manual on Indirect Techniques. Presumably, members of the Committee especially qualified in the subject are intensively reviewing chapters of the manual. The evaluation team has not seen the final draft, but it is evident that the manual will be a useful and authoritative compendium of materials that are presently scattered, fugitive, and in part unpublished. The first two chapters, which introduce the reader to the needs for indirect estimation and discuss the uses and applicability of formal indirect estimation models, are especially valuable. It is expected that the manual will be published by the United Nations and be widely available for prospective users.

There are questions about the intended audience for the manual. Presumably, the manual is to be used by persons already familiar with the simpler techniques of indirect estimation, since these are not described. Thus, the basic methods of reverse survival for estimating vital rates from census data are not discussed.¹ The manual does present specific techniques and calculations in a highly simplified, step-by-step approach.

The manual is apparently designed as a reference source on techniques not now readily available, even to many demographers. The basic organization into data requirements and computational steps for each technique is commendable. Unfortunately, the data needed for a successful application of the indicated techniques are often unavailable. Following discussions of the theoretical uses and limitations of the techniques, the computations to be performed are simply stated as such, and no attention is given to possible or probable margins of error. The unsatisfactory results sometimes suggested by the examples themselves underscore the importance of this point. In its present form, the manual is unsuitable for use by beginners, although

¹ Apparently, the user is expected to be familiar with the methods described in standard texts on demographic techniques.

beginners may well be able to follow the computational instructions at clerical levels of understanding.

The usefulness of the manual should be considerably enhanced with the addition of the planned second volume or section (required by the AID contract) on computer programs. These programs are intended to supplement the methods given in the manual.

Another major study on methodology, Collecting Data for the Estimation of Fertility and Mortality, has been prepared under the supervision of the Committee's Panel on Data Collection. As of mid-September, this report was said to be ready for Committee review. The document discusses the objectives of "improving the accuracy, coverage, timeliness and reliability" of estimates of fertility and mortality through improvements in the collection of basic data from censuses, vital statistics, and surveys. The usefulness of this compendium as a general text is clear, but its value in enhancing our ability to assess quite recent vital trends in most of the Third World is likely to be limited, given the institutional, bureaucratic, and political differences among countries. The study was required by AID and should further the general objectives of the project. Its usefulness could be enhanced if the recommendations on data collection procedures were related more specifically to data problems in the procedures discussed in the estimation manual, in the country studies and, perhaps, in the study on age-misreporting cited in the next paragraph.

A commissioned report, Age-Misreporting, was sponsored by the Panel on Data Collection and is now being reviewed. It is not clear whether the report will be published separately or with another document on the problems of collecting data to measure trends in fertility and mortality.

One can only speculate at this time on the prospective impact of these methodological documents on those responsible for data collection and demographic estimates in the less developed countries. As has been noted, the prospective publications are not geared to meet the specific needs of individual countries. The value of the entire enterprise might still be strengthened if the authors of the country and methodological reports would collaborate more closely.

Causes of Delay in Output

It should be emphasized that the serious delays in output are not attributable to the disinterest of members of the Committee, which met for two-day sessions at six-month intervals with close to 100 percent attendance and participation. All members undertook review functions, and several were deeply involved in specific projects. Even less are these delays due to the lack of diligence and productivity of the small staff of three professionals. Rather, the delays are due to:

- (1) The failure of the Committee to evaluate realistically what could be most usefully accomplished in the time available. The schedules for completing tasks which were presented at each meeting of the Committee were repeatedly shown at later meetings to have been unrealistic. Given this circumstance, the evaluation team found it surprising that the Committee should have agreed to a modified contract in September 1979 (when most of the original contract period had expired) which required the delivery of as many as 20 country reports when none had yet appeared and only two or three had entered the Committee's own formal review process.
- (2) The cumbersome production and review structure. The panel/workshop sequence was inevitably time-consuming and, whatever its educational value, slowed down the production of country reports. Presumably, this was a conscious tradeoff of educational functions for delays in producing country reports. Review by the Committee and processing through the labyrinth of the NAS are formidable. Most of the reports have yet to be subjected to these procedures. A commendable aspect is the insistence on careful technical review and high quality output.
- (3) The reliance on unpaid panel members for leadership and authorship. An undue burden was placed on the small paid professional staff. With the benefit of hindsight, it is evident that the number of paid staff should have been increased.

IV. THE FUTURE

VI. THE FUTURE

At present, the Committee's work on the contract with AID is incomplete. Of the many studies under way, an appreciable number almost certainly cannot be completed before December 31, 1980. The project director, in a statement dated April 26, 1980 (see Table 1), estimated that drafts of some 16-17 country reports and a regional report or set of reports for Latin America would have been completed for review by the Committee and the NAS by the end of the calendar year. It was also projected that the "methodological" reports described above would have entered the final review process by that time. Given the assumption that (judging from prior reports) the entire review process must take a minimum of two to three months and the publication process another three to four months, it was projected that more than half the reports completed by the 1980 deadline would not appear in published form until 1981. According to current staff reports (mid-September), the project has not advanced as rapidly as was predicted in Table 1.

In the view of the evaluation team, it seems certain that more time than was estimated will be required to bring all or even a majority of the listed reports to satisfactory completion and publication. Past performance and current realities suggest that the staff projections given in Table 1 are unrealistically optimistic.

It may be necessary to jettison some of the least promising country reports, to subcontract others to paid authors where feasible, and to give highest priority to those reports deemed most important by the Committee and AID.

Since the series of country reports covers a substantial part of the Third World's population, the reports might well serve as a foundation for a brief summary of the Third World's demographic situation. This perhaps could resemble the form adopted by the NAS in 1963. A feature of such a summary might well be the citation of improved values for mortality, especially infant mortality, which can be derived from some of the country reports. It is recognized that this would not be feasible unless additional time and money are provided, and it might be accomplished only by displacing lower-priority items.

Table 1

EXPECTED COMPLETION AND PUBLICATION SCHEDULE
FOR REPORTS BY THE COMMITTEE ON POPULATION AND DEMOGRAPHY
NATIONAL ACADEMY OF SCIENCES
(As Assessed by RJL on 4/26/80)

<u>Reports on Fertility and Mortality Estimates</u>	<u>Draft Manuscript Ready for Review</u>	<u>Completion of Review Process</u>	<u>Estimated Publication Date</u>
Korea			1/80
Thailand			2/80
Honduras		3/80	7/80
Bangladesh	4/30/80	7/80	11/80
Brazil	6/80	8/80	12/80
Tunisia	7/80	9/80	12/80
Indonesia	8/80	10/80	2/81
Latin America:			
Chile, Guatemala, Bolivia,	6/80	9/80	1/81
Peru, Panama, Costa Rica	10/80	1/81	5/81
Kenya ^a	8/80	10/80	2/81
Kuwait	5/80	8/80	12/80
Egypt	7/80	10/80	3/81
Turkey	8/80	11/80	4/81
Syria and Jordan	10/80	1/81	5/81
Colombia	12/80	3/81	6/81
Malaysia	12/80	2/81	6/81
India	12/80	3/81	6/81
Pakistan	12/80	3/81	6/81
Philippines	2/81	4/81	8/81
Mexico ^b			

^a Report may include general discussion of estimation problems for Tropical Africa.

^b Not certain.

<u>Other Committee Reports</u>	<u>Draft Manuscript Ready for Review</u>	<u>Completion of Review Process</u>	<u>Estimated Publication Date</u>
Demographic Estimation: A Manual of Indirect Techniques	7/80	12/80	5/81
State-of-the-Art Report by the Panel on Data Collection	9/80	1/81	5/81
Special Studies by the Panel on Data Collection:			
Age Misreporting ^C	4/80	8/80	12/80
Problems on Collecting Data to Measure Trends ^C	8/80	12/80	4/81
Final Report by the Panel on Data Collection (Statement for Administrators)	12/80	6/81	10/81
Indirect Estimation Manual-- Vol. 2 (Programs for Methods)	12/80	6/81	10/81

Reports to be done only if 1981 funding is available

Comparisons of Use of Indirect Techniques in Different Settings (Proceedings of Workshops)			
Latin America (on Fertility and Mortality)	4/81	7/81	10/81
Fertility Estimation	6/81	9/81	12/81
Mortality Estimation	8/81	11/81	2/82
Final Report by Committee	6/81	10/81	2/82

^C These reports may be combined into one document.

VII. ADDITIONAL OBSERVATIONS

VII. ADDITIONAL OBSERVATIONS

In addition to its responsibility for assessing project reports, the evaluation committee was asked to assess proposals for enlarging and extending the project. It was also asked to make recommendations on the effective use of the reports and on future directions of work in related areas.

In one sense, the occasion for such advice has passed. The future of the present contract is linked to the Committee's new commitments to the Panel on Fertility Determinants. This panel has assumed responsibility for a new three-year contract with AID. A significant portion of the Committee's time has been diverted already to administrative and substantive work on the new project.

Under the circumstances, it would seem quixotic to attempt major new ventures as an extension of the contract under evaluation. However, an enormous amount of valuable professional time is represented in the partially completed reports. In many cases, rather marginal additional inputs may be required to bring this work to fruition. It may be most practical to jettison some of the weaker reports for less important countries or to combine several into regional reports. It is hoped that the Committee will find it possible to focus on countries of major importance, among which Brazil, Mexico, India, Indonesia, Pakistan, and Egypt appear to be prominent candidates.

The reports in advanced draft characteristically give the reader a useful summary of the country's demographic situation, and they contain an especially valuable assessment of the available data sources and sometimes the conclusions others have drawn from them.¹ The conclusions may well be less precise and novel than one would desire, but if the reports can reliably represent the best assessments available, a significant contribution will have been made. Since the reports probably cannot be completed by December 31, it is hoped that ways can be found to ensure the appearance of those reports which AID and NAS jointly determine to be significant enough to warrant a modest measure of additional support (by AID, NAS, or both).

Plans for making the results of the program more available to a number of less developed countries (in a planned conference on indirect estimates of fertility for Asian countries at the East-West Population Institute in Hawaii) should specify how findings can be used in the near future to advantage. The potentially valuable compendium of methods of indirect

¹ Curiously, the Committee decided as a matter of policy not to compare or evaluate estimates made by others. In the opinion of the evaluation team, this omission weakens the value of the reports. See Committee "Response," October 7, 1980, p. 3.

estimation, if published as a United Nations document, will amplify, supplement, and bring up to date other U.N. publications which have been so important to efforts to improve basic demographic measures from incomplete data.

The evaluation team has little to say about the effective use of the project reports or to offer ideas other than those which surely have already been considered by the Committee and project staff. In addition to the usual publication outlets of the NAS, desirable recipients are centers of demographic work in the United States and other countries; persons with demographic interests, competence, and responsibility (liberally interpreted) in the countries concerned; major libraries in the United States and, in particular, libraries in the less developed areas; and technical assistance and related agencies. Free rights and possible financial incentive (from AID?) to publish appropriate country reports in national languages should be given high priority.

The evaluation team was asked to advise AID on future directions in related areas. The team feels that the present project strayed from the real needs originally stated by AID. It is the team's judgment that far more timely and equally useful reports on these countries could have been produced by the existing project staff (or their equivalent) with the assistance of a small group of paid reviewers (a subset of the Committee). There was probably little need for AID to deal with the large number of countries the Committee selected for study.

Again, the task of making sophisticated and indirect procedures of demographic estimation widely available (e.g., in the project's manual for this purpose) could have been coordinated by the current staff and reviewed by appropriate, paid experts.

With the advantage of hindsight, it seems that these two objectives could have been achieved more efficiently at less cost to AID and certainly with much less unpaid professional time.

In other words, the evaluation team questions AID's need for such major across-the-board enterprises as the NAS project. Across-the-board information is prepared for AID by the Bureau of the Census. Special problems might better be handled by contracting more directly for specific tasks.

Admittedly, these judgments are related to what the team considers to be the key policy needs of AID, which do not seem to require "fine-tuning" in demographic estimates, especially since the reality of fertility declines in many, but especially the larger, LDCs has now been firmly established.

The present project, of course, has important educational and scientific value. In a larger frame of reference, it may have proven to have

been well worth the investment of time and resources. However, it is not evident to the evaluation team that continuation of the project and of similar work by the Committee would be a sound investment for AID. The recent contract relating to determinants of fertility is of a different character.

In more practical terms, the marginal costs of completing several, perhaps most, of the unfinished reports should be small in relation to total input thus far. Therefore, the evaluation team recommends modest financial input for completion of higher priority reports in advanced stages of preparation.

VIII. SUMMARY AND CONCLUSIONS

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In 1977 both expert and lay observers and AID and the Census Bureau disagreed over the extent to which fertility was declining among the two-thirds of the world's population who were living in the less developed areas. AID turned to the NAS, the most prestigious scientific body available, for assistance in attempting to resolve this debate. Under the three-year AID-NAS contract, the National Research Council, the action arm of the NAS, appointed a Committee on Population and Demography. Composed of 12 distinguished demographers, the Committee set up a number of special panels for country reports and other studies. These ultimately included well over 100 population specialists, a large number of whom were from developing nations.

The revised terms of the contract (July 28, 1978) specified that the Committee and its panels should hold 11 international workshops as a step toward preparing the country reports. Nine workshops were held, and a tenth was planned for Colombia in late September 1980. The Committee has, therefore, essentially met its commitment. The project staff and the Committee feel that these workshops made an essential contribution to the project by educating local demographic personnel in the application of sophisticated methodology for estimating demographic parameters. The evaluation team recognizes this value but has little basis for judging its significance.

In addition, under the revised terms of the contract (September 1979), the Committee was obligated to produce 20 country reports and 2 methodological studies, Demographic Estimation: A Manual of Indirect Techniques and Collecting Data for the Estimation of Fertility and Mortality. By April 15, 1980 (the original date for the contract's termination), only two of the reports (one on Korea and one on Thailand) had been published; by June 30, 1980, only one other report (on Honduras) was in print. In June, the termination date was extended at "no-cost" to December 31, 1980. As of mid-September 1980, apparently only one other report (on Bangladesh) had completed the review process and was at the printer. In the view of the evaluation team, the project is far behind any reasonable schedule and it is unlikely that a majority of the reports, much less all of them, will be ready to enter the NAS review process by the end of the calendar year, 1980.

It should be reiterated that the serious delays in output are not due to any disinterest of or lack of involvement by members of the parent committee. Furthermore, the small project staff of three professionals has a highly commendable record of productivity and accomplishment. The delays are attributable to the failure of the Committee to realistically evaluate what could be accomplished in the time available; a cumbersome panel and review structure, including the conscious tradeoff by the Committee of the educational value of country and regional workshops for delays in preparing reports; and reliance on unpaid panel members for leadership and authorship.

As has been noted, the initial procedures developed some years ago for making indirect estimates of fertility and mortality were successful in providing estimates of vital rates of variable quality for the majority of the world's countries that do not have adequate registration of births and deaths. Increasing sophistication in such methods has not led to a similar quantum jump in the state of knowledge, as is illustrated by the published reports of the Committee available at this time.

The report on Korea, using excellent data for a LDC, illustrates the possibilities for "fine-tuning" that may be realized with sophisticated methodology, but it does not evaluate alternative estimates available to AID and other policymakers.

The Thailand report, again using an atypically abundant body of available data, is unable to resolve the question of variable results from alternative sources of data. In using ranges of estimates rather than single-point figures, the conclusions are analytically honest but frustrating to those seeking the "best" estimates of fertility reduction.

The Honduras report illustrates the dilemma of sophisticated methodologists confronted with poor empirical data, data of a kind more typically encountered in the Third World. Use of a more sophisticated methodology could not in this case make up for the basic deficiencies of the available data.

The Bangladesh report (available to the evaluation team only in advanced draft) draws on an abundance of census and survey data, only to come to no conclusion about the most reliable estimates or even the rate of population growth.

The available country reports are scientifically useful in their application of sophisticated methodology but, with the possible exception of the Korea report, of limited value in adding to previous knowledge of fertility trends in the countries concerned.

AID had hoped that the most advanced methods of indirect estimation now available would give answers to the questions of fertility trends with which it was concerned in 1977. However, the slow procedures of the project and the rapidly accumulating evidence of fertility declines led to a different situation by 1980. Furthermore, 1980 and 1981 censuses will soon make some of the country reports substantively obsolete. Given the delays in output and the character of the NAS reports, the results have more scientific interest¹ than current policy significance for AID.

¹ For example, it is hoped that the reports will have value for future application in the measurement of fertility and mortality in the absence of reliable official data.

IX. RECOMMENDATIONS

IX. RECOMMENDATIONS

The Goal

The evaluation team recommends that the NAS Committee and staff be encouraged to complete a carefully selected subset of the current list of remaining reports (see Table 1).

The Context

In light of what has been accomplished and what still remains to be done, it appears that the current schedule of reports cannot be completed by December 31, 1980. There is a high probability that the schedule cannot be met without diminishing the quality of the reports.

Specific Recommendations

The evaluation team recommends that the following specific actions be taken:

1. As soon as possible, a meeting should be held between representatives of AID and members of the NAS staff and Committee.
 - a. At this meeting, a priority should be assigned to the various countries for which reports must be written. In the evaluation team's opinion, Brazil, Mexico, India, Indonesia, Pakistan, and Egypt are among the leading candidates for selection as high-priority countries.
 - b. Subsequent to the assignment of priorities, each country and regional report should be evaluated according to two basic criteria: (1) priority in relation to a country or region of importance and (2) amount of time and effort required to bring the report to completion. Reports for countries of high priority that are almost completed should be finished as soon as possible. Reports for countries of low priority that are far from being completed should

be jettisoned. A careful evaluation should be made of the costs and benefits of completing reports that meet one criterion (high priority or little work remaining) but not the other.

2. Consideration should be given to the most efficient means for finishing the reports that have priority. It may prove expedient to subcontract the writing of those reports by unpaid panel members who have been or seem likely to be unable to complete assignments.
3. The period of performance of the contract should be extended for a limited time (up to six months). Additional funds in relatively small amounts (not exceeding 10 percent of the present contract budget) might be allotted, provided the opportunity exists to make genuinely novel contributions to knowledge (determined jointly by the Committee and AID).
4. Further consideration should be given to improving the quality and utility of the remaining reports.
 - a. The organization of the reports could be made more consistent. Following the emerging patterns in the Bangladesh and Brazil reports, a brief description of the demographic history of the country could be provided, in addition to a review of the state of knowledge about the country's fertility and mortality trends, a description of available sources of data, a comparative evaluation of existing estimates, and a discussion of the contribution of results obtained by applying additional "indirect" techniques.
 - b. Where feasible, "probable-range" and "best-point" estimates should be provided.
 - c. Each report should show how data from the country can best be assimilated into the findings presented. This is to say, each report should provide a ready framework for rapidly extending fertility and mortality trends as new data become available.
 - d. The manual on estimation, the data collection report, and the country reports should be more closely coor-

dinated. For example, the estimation manual could use more examples from the country reports. The country reports could refer the reader to publications on estimation or data collection for further details on analytic techniques or sources of analyzed data.

The Future

The evaluation team does not recommend that the NAS undertake additional work under the contract, as was proposed in Dr. Lapham's letter to Dr. Brackett (AID, March 26, 1980), with the possible exception of a brief summary on the demographic situation in the Third World based on the work of the Committee. The NAS Committee and staff should concentrate on completing the work required under the present contract and on continuing the work required under the NAS-AID contract on determinants of fertility change.

APPENDIX

MEMBERS OF COMMITTEE ON POPULATION AND DEMOGRAPHY
AND ASSOCIATED STAFF

Committee on Population and Demography

Ansley J. Coale, Chairman, Princeton University
William C. Brass, London School of Hygiene and Tropical Medicine
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Ronald Freedman, University of Michigan
Nathan Keyfitz, Harvard University
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Jane Menken, Princeton University
Samuel H. Preston, University of Pennsylvania
William Seltzer, United Nations
Conrad Taeuber, Georgetown University
Etienne van de Walle, University of Pennsylvania

Senior Professional Staff

The senior professional staff associated with Committee projects
evaluated in the team report are:

Robert J. Lapham, Study Director
Kenneth Hill, Senior Research Associate
Hania Zlotnik, Research Associate