

AID 1025-1 (7-71) (FACE SHEET)
NONCAPITAL PROJECT PAPER (PROP)

I. PROJECT IDENTIFICATION

P.A. #0082-R-1

1. PROJECT TITLE POPULATION DYNAMICS
(DEMOGRAPHIC STUDY UNIT)

APPENDIX ATTACHED
 YES NO 23p.

2. PROJECT NO. (M.O. 1025.2)
615-11-580-141

3. RECIPIENT (specify)

KENYA

COUNTRY

REGIONAL

INTERREGIONAL

4. LIFE OF PROJECT

BEGINS FY 72

ENDS FY 77

5. SUBMISSION

ORIGINAL 11/71 DATE

REV. NO. DATE

CONTR./PASA NO.

II. FUNDING (\$000) AND MAN MONTHS (MM) REQUIREMENTS

A. FUNDING BY FISCAL YEAR	B. TOTAL \$	C. PERSONNEL		D. PARTICIPANTS		E. COMMODITIES \$	F. OTHER COSTS \$	G. PASA/CONTR.		H. LOCAL EXCHANGE CURRENCY RATE: \$ US (U.S. OWNED)		
		(1) \$	(2) MM	(1) \$	(2) MM			(1) \$	(2) MM	(2) COOP COUNTRY		
										(1) U.S. GRANT LOAN	(A) JOINT	(B) BUDGET
1. PRIOR THRU ACTUAL FY												
2. OPRN FY 72	288	137	31	2	1	30	119	200	31			
3. BUDGE FY 73	171	68	16	9	5	3	91	99	16			
4. BUDGE FY 74 +1 FY	174	70	16	17	25	3	84	101	16			
5. BUDGE FY 75 +2 FY	180	77	16	17	25	2	84	108	16			
6. BUDGE FY 76 +3 FY	56					1	55					
7. ALL SUBQ. FY												
8. GRAND TOTAL	869	352	79	45	56	39	433	508	79			

9. OTHER DONOR CONTRIBUTIONS

(A) NAME OF DONOR	(B) KIND OF GOODS/SERVICES	(C) AMOUNT

III. ORIGINATING OFFICE CLEARANCE

DRAFTER SMSilberstein/BBahl	TITLE Assistant Program Officer	DATE 11/19/71
2. CLEARANCE OFFICER Bert Tollefson, Jr.	TITLE Mission Director	DATE 11/19/71

IV. PROJECT AUTHORIZATION

1. CONDITIONS OF APPROVAL

Initial Prop approval is for a period of three years. At that time the activity will be reviewed with the GOK in terms of methodologies developed, and a decision will be reached on project direction for the remaining two years.

2. CLEARANCES

BUR/OFF.	SIGNATURE	DATE	BUR/OFF	SIGNATURE	DATE
AFR/EAF	Jerry Knoll	12/22	AFR/TAC	Princeton Lyman	
AFR/IP	Edward Hogan	1/6/72			
DAA/AFR	Philip Birnbaum	1/6/72			

3. APPROVAL. AAs OR OFFICE DIRECTORS

SIGNATURE Dr Samuel C. Birnbaum	DATE 1/7/72
TITLE AA/AFR	

4. APPROVAL A/AID (See M.O. 1025.1 VI C)

SIGNATURE	DATE
ADMINISTRATOR, AGENCY FOR INTERNATIONAL DEVELOPMENT	

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A. The Project Goal

1. Goal Statement

The Government of Kenya has requested A.I.D. help in establishing a Demographic Studies Unit (DSU) in its Ministry of Finance and Economic Planning. The unit's activities would put study of Kenya's vital statistics on a continuing basis, and through analysis of existing demographic statistics, would provide demographic information in a form useful in developmental planning. The broad goal toward which this activity should lead is, first, an increasing awareness on the part of the Government of Kenya concerning the importance of accurate demographic data, and, second, its use in development planning.

The Republic of Kenya, with one of the highest growth rates in the world, indicated to be at least 3.3 per cent, has recognized the need to extend and sharpen her knowledge of her population. The immediate need for this knowledge is to provide the basis for a comprehensive population policy. While it is the GOK's policy to support family planning programs, lack of precise, current knowledge concerning Kenya's population growth, the factors that affect her population growth, and the characteristics of her population have contributed to her failure to develop either a comprehensive policy or a complementary network of programs in support of that policy. The Population Council, in its 1965 report to the Government of Kenya, recommended the collection of improved statistics to establish the basis for a viable network of population dynamics programs. Dr. Norman Miller's study, The Politics of Population, printed in February, 1971, found that the required statistics and other demographic data are still largely unavailable.

Kenya also needs this demographic knowledge for development planning in various other sectors and for macro-economic planning. The International Bank for Reconstruction and Development has noted repeatedly that the GOK's priority planning need is to establish - or strengthen - planning units in the ministries. This includes both ministries responsible for the productive sectors, and also those responsible for the social services where there are discernible gaps in long-term development strategy. Interministerial programs to attack such key problems as unemployment, rural development, and urban development will also require improved long-term planning.

Present measurement of population growth is inadequate to meet Kenya's planning needs. The decennial census can provide only rough and infrequent indications of the rate of growth, while the traditional civil registration is too constrained by its legal purposes, and, typically, too incomplete, to provide a satisfactory method of measurement.

The critical needs, then, are to develop acceptable low cost methods of securing current demographic information to project trends into the future, to deliver the information to the ministries, and to insure that the ministries understand the importance of the information identifying, preparing, and implementing development programs. This project is designed to help meet these needs.

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2. Measurements of Goal Achievement

- a. The availability to users of reliable, current information on a continuous basis, at low cost.
- b. The regular transmittal of this information from the Statistics Division in the Ministry of Finance and Economic Planning to the planning offices of the various other ministries.
- c. Evidence that long term development strategies of the recipient ministries reflect the newly available demographic information.
- d. Requests from the recipient ministries to the Statistics Division for additional information, either directly or through the Advisory Committee

3. Basic Assumptions of Goal Achievement

- a. Various ministries and branches of the GOK already recognize, or can be convinced of, the value of current reliable demographic information, have the capacity to understand and use this information in development planning, and will request additional information as new needs are identified.
- b. The information to be developed by this project is not now available, is needed for planning, and can best be developed and disseminated by the activities envisaged in this project.

B. The Project Purpose

1. Statement of Purpose

This project is both a research project and an institution-building project. It has three major objectives:

- a. Testing and developing new methodology;
- b. Collection and analysis of population data for Kenya's planners;
and
- c. Utilization of the best techniques developed by the DSU for national surveys by the conclusion of this project.

The new methodology is to develop low cost techniques for measuring Kenya's current population growth, the factors that affect population growth, and the characteristics of the population on a continuing basis. The analytical studies are to be used in both sector and macro-economic planning. They will be concerned with intensive analysis of existing demographic data and will emphasize projections of population growth, program costs, etc., into the long term future. With the use of the newly developed methodology in national surveys and the frequent distribution of the analytical studies, the DSU will provide the Government of Kenya with a sound demographic basis for development planning.

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The project is designed to last for five years. Continuance of the project after three years will depend on the outcome of a project progress evaluation.

The DSU's activities are to be carried out for three years on a pilot, experimental basis. If a thorough review, to be conducted late in the third year, shows the pilot program to be successful in developing appropriate and inexpensive methodologies, and if prospects for institutionalizing the program appear promising, steps will be taken to institutionalize the DSU and its program during the project's fourth and fifth years. If institutionalization does not appear feasible, a decision will be made in terms of project direction.

2. Conditions expected at the end of the project

a. At the end of the Three Year Pilot Period:

- (1) Demographic Studies Unit formally established and operating.
- (2) Various techniques for measuring vital statistics on continuing basis developed and tested in study area.
- (3) Reporting system in operation:
 - (a) Reports on methodology and vital rates developed by the new techniques.
 - (b) Analytical studies based on existing statistical information.
 - (c) Project progress reports.
- (4) An advisory committee to the DSU established, including representatives of such organizations as the University of Nairobi, the Department of Registrar-General in the Office of the Attorney General, the Ministry of Finance and Economic Planning's Planning Staff, to insure the studies are disseminated and that they meet stated needs of the consumers.

b. At the end of the five-year period, the above, plus:

- (1) Support of the DSU activities, either as a separate entity or within the Statistics Division activities, by the Government of Kenya.
- (2) Staffing and management of the program by trained Government-of-Kenya personnel.

3. Basic Assumptions Related to Purpose

a. The techniques and the scope of this project are warranted by the dynamics of Kenya's population and are suitable to Kenya's field conditions.

b. The two key GOK persons (described later in this PROP) will be

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available for the duration of the project.

c. Participants will be supplied and trained as needed.

d. The resident advisor will be qualified.

C. Outputs and Output Indicators

1. Chronology

a. First Year

Demographic Studies Unit organized, staffed, and supplied, both at central headquarters and in the field; Advisory Committee established; continuous study of vital rates produced within selected study area; plans established for first analytical study, using existing data. Report schedule established.

b. Second Year

First retrospective household survey completed; vital rates for study area developed; continuous measurement system established; conclusions from experimental studies using alternative methods published; first analysis, based on existing demographic statistics, completed and new studies initiated; based on needs as stated, by advisory committee and recipient ministries, short-term training completed at the U.S. Bureau of Census for Chief Clerk and Field Supervisor; two year summary report published.

c. Third Year

Tentative selection of superior methodology and organization; new experimental studies pertaining to different vital rates developed; alternative methodology pertaining to basic vital rates developed, if necessary; studies based on analysis of existing data continued; project review to determine suitability of project activities for permanent adoption by GOK; possibilities re permanent GOK support analyzed and decisions made on future of the project. Two participants selected and sent to long-term academic training in the United States.

d. Fourth Year

Continuous and retrospective measurement of vital rates continued; if not yet done, final selection of single methodology; studies based on analysis of existing materials and their distribution continued; participants sent abroad for study as determined during third-year review.

e. Fifth Year

A satisfactory system for measurement of population change, in Kenya as a whole, developed; experimental applications of the system in various areas of the nation, and preparations made for the extension

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of the system to the country as a whole; studies based on existing material continued; conclusions drawn regarding all previous work; summary reports issued; programs for future studies developed; return of participants to assume roles in the program; operation of program according to form and scope that will be continued by GOK.

2. Assumptions Related to Outputs

- a. Director, Deputy Director, UNC Advisor, and other personnel have required skills, and will be available for the duration of the project.
- b. The techniques described are applicable to Kenyan conditions; or new techniques can be developed.
- c. Returned participants prove to be capable and are assigned to appropriate positions.
- d. Administrative requirements for project operation met on schedule.
- e. The various planning offices will cooperate with the DSU program.
- f. Activities of this project will be coordinated with relevant activities of related projects.

D. Project Inputs and Related Assumptions

1. Funds in Support of Kenya Operations

The total cost of the study program in Kenya (excluding UNC contract costs) is estimated at \$138,310 during the first year of operations, and at \$653,750 during the five-year life of the project.

a. GOK Funds

During the first year, when purchases of equipment are planned, the Government of Kenya will be able to provide goods and services valued at \$50,000. Thereafter, the GOK contribution will increase to about \$67,000 in the final year. A summary of estimated costs is provided in the attached table (Budget Estimate).

Major contributions by the Government of Kenya will consist of the services of a Director and Deputy Director, housing allowances for all Kenyan staff (a normal payment in addition to salaries in public service and most other employment), an increasing share of living costs for staff in travel status, and other direct costs totaling about \$26,000. In the attached table, it is assumed that the Director of the Statistics Division will serve as Director of the DSU, with half of his gross salary attributed to that project. Other costs to be carried by Kenya during the first year are as follows;

Rental of 3 field offices	\$ 2,500
Utilities for field offices	500
Computer time (1 hour per week)	2,100
Computer cards and tapes	500
Printing	1,000
Office Supplies	1,000
Purchase (or value) of furniture for Central Office and 3 field offices	5,300
Central Office services (Consultation with Permanent Secretary and other professional staff of Ministry, payrolls, accounting, procurement services, computer operator, key-punch services, general library faci- lities, postage, etc. Calculated at 25% of total salaries of Kenyans working on project.)	13,600

b. AID Funds

Excluding UNC contract costs, the largest amount of AID funds requested is needed to pay the salaries of Kenyan staff other than the Director and Deputy Director. These include a Senior Field Supervisor, a Chief Analyst (to be concerned with the analytical studies described earlier), a secretary and a typist, and other staff, as follows:

	<u>First Year</u>
5 Clerks in Central Office	\$ 3,875
1 Junior Clerk in Central Office	350
16 Enumerators for retrospective surveys at \$560	9,000
20 Recorders for continuous surveillance work at \$560	11,200
6 Field Supervisors at \$1,400	8,400
4 Drivers	2,250
3 Junior Clerks for field offices	1,050

In determining the number of enumerators, allowance has been made for 50 household visits per enumerator per week, or 200 per month, 1,200

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per six-month period. Thus 14 enumerators would cover about 17,000 households (80-90,000 population) twice each year. An additional two enumerators are included for replacement of those sick or on leave.

The estimate of 20 full-time recorders assumes 40 clusters, with each recorder covering two clusters. In practice, however, a large number of recorders may be employed, with some of them on a half-time basis and covering only one cluster.

AID funds are requested to provide per diem for Kenyan employees (other than the Director and Deputy Director) in travel status. After the first year, however, the Government of Kenya expects to cover an increasing part of this cost.

Equipment

Equipment costs will be substantial during the first year, but minor thereafter. Funds are requested to purchase four vehicles, of which three will be of the Jeep type, and operate out of the three field offices. The fourth will be for use by the Senior Field Supervisor and other central office staff when traveling in the field.

Other equipment to be purchased during the first year is tentatively scheduled as follows:

- 1 Savin or Xerox or MFM copying machine
- 1 Mimeograph-type machine
- 4 Printing calculators
- 1 Electronic calculator
- 2 Portable tape recorders
- 1 35 mm camera
- 1 Slide projector
- 1 Overhead projector
- 2 Typewriters (1 electric, 1 manual, long carriage)
- 2 Printing adding machines
- Miscellaneous small items (\$500)

Provision is also made for purchase of demographic books and documents.

Other Costs

Aside from the above, funds are also requested to supply petrol, oil, and maintenance for the four vehicles. This provision has also been found necessary in other Poplabs. Provision for such needs from regular government sources is so inadequate that without special dollar support, there is danger that the vehicles will often remain idle.

The provision for rental of a central office (but not the field offices) from AID funds is also based on existence of unusual circum-

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stances. The GOK has no space available, now, in regular quarters. It is felt that obtaining approval from the Ministry of Works for rental of outside adequate space would unnecessarily delay the start of the project. Therefore, the project is designed so that the contractor rents the office space for the first two years of the project, after which time, the Statistics Division will acquire adequate space for all functions.

2. Funds in Support of UNC Operations

The cost of UNC operations, which is estimated on the basis of experience in other Poplabs, is calculated at \$102,800 in the first year, and \$507,000 over the five-year life of the project. Of the first year total, the major part, (nearly \$50,000) represents the salary, fringe benefits, and allowances of the Resident Advisor. Provision is also made for professional back-up staff (one half time of one professional) and for essential administrative work.

The funds for consultants will provide, during the first year, for a visit by a small UNC team to participate in the selection of a study area (or areas) and to assist in a review and revision of the program. Provision is also made for an extended visit by a sampling expert, and for professional and technical assistance in map making and matching. In the following years, much of the consultation will relate to specialized techniques of analysis, such as methods of projecting birth and death data, and the development of life tables, and application of the "Brass technique."

The estimated cost of travel includes a total of \$2,400 per year to transport two Kenyan officers of DSU to the site of the annual Poplab Conference.

Other costs consist largely of a small part of the Poplab office rental, communications, and supplies. The provision for UNC overhead is consistent with the terms of the university's current agreement with AID/Washington.

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DETAILED BUDGET ESTIMATES

Part A. Estimated Costs of Demographic Studies Unit
(In U.S. Dollars)

	1 Jul 71 to 30 Jun 72	1 Jul 72 to 30 Jun 73	1 Jul 73 to 30 Jun 74	1 Jul 74 to 30 Jun 75	1 Jul 75 to 30 Jun 76
1. Kenya Personnel					
Director (50%)	(4,760)	(4,900)	(5,040)	(5,180)	(5,320)
Deputy Director (100%)	(6,350)	(6,550)	(6,750)	(6,950)	(7,150)
Field Supervisor	2,600	2,700	2,800	2,900	3,000
Chief Analyst	2,600	2,700	2,800	2,900	3,000
Secretary (1) and typist (1)	2,100	2,200	2,300	2,400	2,500
Other office and field staff (see attached)	35,100	36,800	37,500	38,200	38,900
Housing allowances	(12,000)	(12,000)	(12,000)	(12,000)	(12,000)
Per diem for staff in travel status	5,700	4,700	3,700	2,700	1,700
Ditto - paid by Kenyan Govt.	(-)	(1,000)	(2,000)	(3,000)	(4,000)
Total salaries and allowances	49,100	49,100	49,100	49,100	49,100
2. Commodities					
Vehicles (4)	15,000	-	-	-	-
Office and field equipment	9,700	1,000	1,000	500	500
Total Commodities	24,700	1,000	1,000	500	500
3. Participants		(1,200)	(1,200)	(1,300)	
4. Purchase of books and documents		7,000	15,000	15,000	
	2,000	1,000	500	500	
5. Other costs					
Petrol, oil, maintenance, etc.	6,000	7,000	7,000	7,000	7,000
Rent of Central Office and misc.	6,900	6,900	(6,900)	(6,900)	(6,900)
Data processing, office supplies, printing, rent of field offices, etc. (see attached)	(26,500)	(23,700)	(26,900)	(30,000)	(31,400)
Total other costs	12,900	13,900	13,900	13,900	13,900
6. Total U.S. \$ (Excludes figures in parentheses)	88,700	72,000	72,600	72,100	56,600
7. Contribution of Kenya Govt.	49,610	49,350	60,790	65,230	66,770
8. Total Field Operations excluding UNC contract costs	138,310	121,350	133,390	137,330	123,370

Footnote: GOK inputs shown in parentheses

The budget will be reviewed thoroughly at the end of three years to determine the additional GOK inputs needed for institutionalization of the project's activities. For instance, the GOK might assume petrol, local salary, and all office costs at that time.

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DETAILED BUDGET ESTIMATES**Part B. Estimated Costs for UNC Technical Support
(In U.S. Dollars)**

	1 Jul 71 to 30 Jun 72	1 Jul 72 to 30 Jun 73	1 Jul 73 to 30 Jun 74	1 Jul 74 to 30 Jun 75	1 Jul 75 to 30 Jun 76
1. Personnel					
Statistician-Demographer (100%)	26,000	26,000	27,300	28,700	30,000
Supporting staff (50%)	13,000	13,000	13,000	13,000	13,000
Administrative Assistant (20%)	3,500	3,500	3,700	3,900	4,100
Sub total	42,500	42,500	44,000	45,600	47,100
Fringe benefits (14%)	6,000	6,000	6,200	6,400	6,600
Allowances, including moving	18,000	13,000	13,000	13,000	18,000
Consultants	7,000	7,000	7,000	7,000	7,000
Total salaries and allowances	73,500	68,500	70,200	72,000	78,700
2. Commodities	2,000	1,000	1,000	1,000	1,000
3. Travel					
Equivalent of 6 RT overseas @ \$950	5,700	5,700	5,700	5,700	5,700
Travel to Poplab Conference	2,400	2,400	2,400	2,400	2,400
Subsistence, etc.	4,000	4,000	4,000	4,000	4,000
Total	12,100	12,100	12,100	12,100	12,100
4. Other Direct Costs					
Car rental, communications, supplies, office rental, etc.	5,000	5,000	5,000	5,000	5,000
5. UNC Indirect Costs					
(33.16 of on-campus salaries, and 18.04% of off-campus)	10,200	10,200	10,500	10,800	11,100
6. AID Support					
To UNC	102,800	96,800	98,800	100,900	107,900
To DSU	88,700	72,000	72,600	72,100	56,600
Total AID Support of Project	191,500	168,800	171,400	173,000	164,500
7. Contribution of Kenya Govt.	49,610	49,350	60,790	65,230	66,770
8. Grand Total	241,710	218,150	232,190	238,230	231,270

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E. Rationale

The strategic reason for this project was described in the statement of the goal. The rationale for choosing this specific project over alternatives is based on 1) the current status of conditions and related activities in Kenya, 2) the development of the International Program of Laboratories for Population Statistics, and 3) the nonavailability of resources to carry out alternative programs.

The status of current related activities show this to be a particularly appropriate time for Kenya to initiate a long-term study of population growth and its implications for the nation. The imminent conclusion of the current decennial census activities will make available supervisory and clerical staff within the Statistics Division that have hitherto been fully occupied. Revelations by that census of a high population growth rate have increased GOK leadership support for the kind of activity proposed by this project. Valuable statistical materials, including the results of the census itself, provide an opportunity to undertake fruitful analytical studies. The professional experts who helped the GOK carry out the census remain available to assist with the new activity.

To give outside support to organizations like the DSU, AID/W has entered into a Basic Agreement with the University of North Carolina to establish an international program for improving statistical resources designed to measure population change and related problems. This program has resulted in the establishment of an extensive catalogue of "Protocols" suggesting objectives and techniques for a variety of research studies in demography and related fields. The UNC is also engaged in organizing a number of units, like the DSU, into an international cooperating group to exchange technical experience. This exchange will take place in the form of annual conferences, distribution of publications, provision of short-term specialist advisors, and help in preparing documentation. As part of this international program, the DSU would have access to both the technical expertise and the organizational support offered by this program.

A survey of the activities of the GOK and of the main foreign organizations active in this field reveals the absence of available current or projected inputs into the kind of activity envisaged by this project.

Operational Strategy

The activities to be conducted by the Demographic Studies Unit will be of two types: 1) Studies of methods of measuring births and deaths and the factors associated with such changes in population, which research will involve substantial collection of new data from a specific area and should yield meaningful vital rates for a significant area of the country; and 2) analysis of existing demographic statistics, particularly as they contribute to development planning, which will deal with the data accumulated by other studies and will not require the collection of new information outside of the previously designated study areas.

Relation to Vital Registration System

It should be established here that the DSU program relating to the Department of Registrar-General is not conceived of as an alternative to the official vital registration system of the Office of the Attorney-General.

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The two programs will, in fact, serve very different purposes.

The vital registration system is intended primarily for legal purposes, with its statistical output a by-product. It provides birth registrants with valuable evidence of age, place of birth, parentage, etc.; yields legal evidence of death; and, when fully established, should yield useful counts of births and deaths for all political divisions of the country. In the experience of other countries, however, attainment of complete coverage can be expected only after the passage of many years. Even then, in view of its legal objectives, the vital registration system can serve only as a limited and inflexible source of statistical information. It cannot provide the population counts that are necessary to compute birth and death rates, and can throw relatively little light on such important questions as fertility, or on factors affecting fertility such as the age distribution of the female population, the effect of family planning programs, etc. The DSU system, on the other hand, being based on a statistical sample, should yield quick, accurate results at moderate cost. It should not only provide dependable birth and death rates, but should also yield a wealth of information essential in the study of fertility, the estimation of future population growth, the evaluation of family planning programs, and the furtherance of economic and social planning for the nation.

The DSU program will not serve the legal needs of the individual and will not provide statistics in such geographic detail. It can thus supplement the legal system, but cannot replace it. The special qualities of each system should, in fact, prove to be of advantage to the other.

Establishment of Study Area

An early step in approaching the measurement of vital statistics will be selection of an area of study. The study area should include a significant and varied population and should not be too difficult of access. It is not contemplated that the entire population of the area should be under study; since a probability sample of the population will be studied, however, the results obtained can be attributed to the study area as a whole.

Selection of Methodology

In research concerned with methodology, the approach to be adopted must be highly flexible. It would be undesirable to prescribe a rigid research formula that could not be adapted to changing research goals and changing conditions. Certain features of the approach may be outlined tentatively; however, based on the goals that appear reasonable and on experience in other countries.

It is clear, for example, that a study covering fewer than 25,000 population would yield too few births and deaths per year to permit analysis by major population group; on the other hand, a study covering more than 100,000 population would appear rather large for methodological purposes, and would also be costly. It is assumed that the study conducted by DSU would include some 80,000 to 100,000 population in perhaps 15,000 to

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20,000 households.

In a study of this type, reliance on a representative sample of individual dwelling units might involve considerable administrative difficulty and excessive cost. Instead, it is proposed to select a probability sample of small communities or groups of dwelling units ("clusters") in which each dwelling unit would be studied. Thirty to forty such clusters, averaging about 500 dwelling units apiece, might provide a suitable sample; or a larger number of clusters of smaller size might be desirable in order to represent numerous population groups and to achieve greater statistical accuracy. There are technical and cost reasons, however, for avoiding very small clusters.

Once the study area has been determined and the sample of clusters chosen, certain preparatory steps must be taken before the main research can begin. These steps include the preparation of very detailed maps that will identify each dwelling, the assignment of dwelling numbers, and the preparation of descriptive notes regarding the topography of the location, its economic and social characteristics, etc. An initial "census" of each cluster will be needed to provide a denominator for the vital rates to be prepared. When these steps have been taken, the first research project can begin.

Measurement of Vital Events

There are many ways to approach the measurement of vital events. It is necessary to emphasize again that in a survey that is partly methodological, it would be unwise to adopt a rigid approach at the outset and adhere to it without deviation. In reality, several methods will doubtless be employed. The following paragraphs describe one method that has been used effectively elsewhere and will doubtless be carefully tested by DSU. Under this approach, births and deaths in each cluster are measured by two independent statistical systems, the results matched, and statistical estimates prepared of the total number of births and deaths, including those missed by both systems.

First, the DSU will use the continuous surveillance system which employs a recorder to register all births and deaths within a daily cluster on a day-to-day basis. His objective, which he cannot achieve but should approach, is to obtain standard items of information regarding every birth and death that occurs.

Next, a discrete retrospective survey will be made periodically, probably every six months, in the same clusters of dwelling units in which the continuous surveillance system is employed. In such surveys, a trained enumerator will visit each dwelling to inquire as to births and deaths that have occurred during the past period, say six months. The retrospective survey thus provides a second record of vital events for each cluster.

The information gathered would not only enable reliable and accurate assessment of growth, but would also include data on factors which affect growth.

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For example, if a family planning program is operating in the area, its effectiveness would be assessed statistically.

An important additional part of the research process involves a painstaking matching of the results of the two measurement systems, to determine which events have been identified by only one system, which only by the other, and which by both. It is then possible, by use of the Chandrasekaran-Dewing formula, to estimate the number of events that have been missed by both methods and thus arrive at a statistical value representing the total number of events that occurred. Use of the formula is justified, however, only if the two measurement systems have been completely independent.

Along with the research activities which have been briefly described above, a great deal of experimentation and testing will be undertaken. Thus, methods and procedures can be identified, which the regular statistical service can later use effectively on a nationwide scale.

There are, for example, alternative methods for carrying out the continuous surveillance, some relying on a formal, systematic schedule of household visits, and others relying on informal contacts in the marketplace and elsewhere, without regular household visits. It will be desirable to experiment with different sizes of clusters, in order to determine the most effective and most economical size. Other tests may compare different methods of determining age, or contrast the effectiveness of men and women enumerators, or permanent versus part-time employees, etc. It may be found, of course, that some methods are more effective in rural areas, while others work better in urban.

Correlative Research

Methodological research relating to other aspects of demographic statistics may 1) test the suitability of using existing indices of fertility and mortality, 2) evaluate the reliability of demographic data that may be affected by memory lapse, 3) assess methods for the enumeration of nomadic populations, 4) experiment with sampling schemes for use in population censuses to obtain more information than that resulting from the general census, 5) test suitable techniques of map preparation for demographic surveys, or 6) test suitable techniques for investigation of nutrition levels.

Valuable substantive data can be obtained in connection with the semi-annual household surveys at little additional cost. Since the vital data to be collected in the surveys are relatively simple, it will be feasible to devote a second part of the household questionnaire to other economic and social subjects. Because this part of the questionnaire may be changed with each survey, it will be possible, during a relatively few years, to test many research techniques and to obtain a great variety of useful information. One survey, for example, may investigate the incidence of maternity among unmarried women. Other surveys might throw light on migration or on the reproductive histories of women. Much interest will be attached to studies of attitudes toward family planning as well as to other aspects of family planning programs. Although the results of these surveys would relate only to the study area, such information

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should often be sufficient for planning purposes. Experience in a limited area, moreover, could determine the feasibility and probable value of a broader survey.

Research Program: Analysis of Existing Data

An important second phase of the DSU program would be concerned with intensive analysis of existing demographic data. This work should not duplicate analysis by other offices, of course, but would help to assure that meaningful records and survey results were fully exploited. Considerable emphasis would be given to projections of growth, program costs, etc., into the future - an exercise which most operating offices are not prepared to perform. Where possible, use would be made of sophisticated and recently developed methods which have been proved in other countries, and the effectiveness of these methods would be critically observed.

Analysis of existing data would not be confined to any single sector of the country, of course, but might apply to the country as a whole or to any of its parts. The decennial census would be the major source of materials for analysis, and, since the results of the 1969 census are only now becoming available for analysis, early initiation of the DSU program would be particularly timely. The results of the recent Household Budget Survey also include demographic information, and the whole survey has important implications for the population of Kenya. It would appear to permit, for example, an examination of the relationship between income and fertility. The results of the budget survey have been largely unexploited.

Special analyses would be designed primarily to provide demographic information for use in the establishment of national goals; the development of national plans and programs; the planning of specific public services, such as health, education, or housing; and the solution of economic and social problems. Many of the studies would serve the needs of economic and social planners, and it is assumed that planners in the Ministry of Finance and Economic Planning would commonly aid in drawing up the research objectives.

Considering the wide variety of studies that may be undertaken in this phase of the program, it is not feasible to describe the methodology that will be used. As indicated earlier, however, appropriate attention will be given to new methods of analysis, particularly those that have been used effectively in other countries. Some of these methods have been described in several recent publications on demographic estimation and analysis. The Poplab Program itself will produce an extensive catalogue of "Protocols," suggesting objectives and techniques for a variety of research studies in demography and related fields. Exchange of experience with Poplabs in other countries will also facilitate development and testing of effective methods.

The wide variety of studies that may be undertaken in this phase of the program may be indicated by considering a few examples:

An early assignment might be to study recent trends in population development through comparison of census results. The respective

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trends in the various provinces, county councils, and districts should be analyzed. Evidence of urban-rural migration should be carefully sifted. If possible, crude rates of natural increase by geographic area or by tribal group should be calculated, using methods such as those described in Brass, et al., "The Demography of Tropical Africa." An important part of this assignment would be to point out the implications of the indicated trends for national development.

Another worthwhile project might involve a study of household composition to reveal the number of persons per household, household types, tribal differences in households, etc. An analysis of family formation might be included.

A third project, to be carried out in cooperation with the health authorities, might undertake to determine the cost of health services at some future date, say 1980. Careful estimates of the future population, by sex and age groups, would be a basic requirement. Also important, would be the best estimates of the prevalence of major diseases and ailments, taking account of those associated with particular age or sex groups and, perhaps, with main types of economic activity. In estimating the requirements for hospital beds, doctors, technicians, nurses, etc., account should be taken of international standards, of actual practice in other countries, of discernible trends in the use of para-medical personnel, etc. Similar approaches might be used in estimating future requirements for education and housing. Health, education, and housing account for a large part of total public expenditures. Such studies would probably require more data collected than are presently available. If so, studies of this scope, which require additional primary data, will be funded separately provided that agreement is reached between USAID and the GOK.

Possible Field Studies

It is not contemplated that the research described in this section would involve collection of new data since the available resources would be insufficient to cover such activity. Once a competent analytical staff is assembled, however, it should be possible to arrange with other offices conducting field studies to include additional items on their questionnaires to enhance their usefulness in demographic analysis.

For the DSU to undertake a field study independent of the enumeration of vital events or outside the selected "study area," it would doubtless be necessary to propose a separate agreement with UNC, with special financing. This approach might be considered if the DSU were contemplating a broad-scale study of morbidity or migration.

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Organizational Arrangements

Undertaking by Kenya Government

The program herein proposed contemplates establishment of a Demographic Studies Unit, as a separate part of the Statistics Division, reporting directly to the Chief Statistician. It is understood that the DSU will be concerned primarily with research and analysis in the field of demography and related areas. On the other hand, the activities of DSU may extend considerably beyond the subject matter referred to in this proposal, with such additional demographic activities staffed and financed by the Government of Kenya. The Government of Kenya hopes to continue the DSU beyond the five years contemplated in this program.

The Government of Kenya undertakes to provide a Director and Deputy Director for DSU, space for two or three field offices, all essential furniture and office supplies for these offices and the Central Office, and computer time as required by the research program.

It is anticipated that the Government of Kenya will establish a Central Office for DSU, to be supervised by the Director and Deputy Director. A small staff will be employed in this office, and the operation of the research program will be directed from it.

In addition, two or three small field offices will be established within the selected study area to coordinate and direct field activities. The field offices will be supervised by a competent Field Supervisor, and each will employ full-time or part-time field staff as required. It is expected, however, that the Central Office will maintain close contact with field activities at all times.

The Government of Kenya would consider setting up an Advisory Committee of suitable membership to make suggestions on research projects of the DSU. Membership of the Committee may include representatives of the Ministry of Finance and Economic Planning, of other Ministries, and of the University of Nairobi or other private organizations with competence in demography.

Undertaking by UNC

Within the terms of its contract with AID, the UNC undertakes to provide a full-time Resident Advisor, as well as short-term specialist advisors to assist in highly technical operations, such as sampling, map-making, and computer programming. UNC will provide manuals and other scientific materials to aid in the research program of DSU, will conduct periodic seminars or conferences for the benefit of the top staff of all the Poplabs, and will assist in on-the-job training of DSU staff. At a later date, the UNC may be prepared to arrange for special courses in demography in an American university for one or more DSU staff members.

AID will provide additional financing of DSU activities (Budget B) as agreed to between the Government of Kenya and AID. It is expected that

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such financing will include the cost of staff (other than the two top supervisory positions mentioned above), the purchase and operation of required vehicles, purchase of office equipment, international travel and per diem of Kenyan officials attending Poplab conferences, and the rental for two years of a Central Office for DSU.

Staff Qualifications

The Director, Deputy Director, and other top staff of DSU shall be persons of superior ability and sound experience. They should receive salaries commensurate with their appropriate qualifications. The following minimum qualifications will apply:

Director

Advanced degree in statistics, demography or an applied social science, with several years of responsible experience.

Deputy Director

A university graduate, with sound experience in statistics, demography or an applied social science, and with demonstrated ability.

Senior Field Supervisor

A university graduate, with some practical experience and with demonstrated ability.

The UNC Resident Advisor shall be appointed after approval by the Government of Kenya. He should have the following qualifications:

UNC Advisor

Ph.D. in demography or statistics, or in an applied social science, with special training in demography or statistics or survey methods, plus at least five years of responsible experience in the collection and analysis of demographic data. Additional high-level experience may be substituted for part of the academic qualifications.

F. Course of Action - Narrative Statement

Early administrative arrangements will include establishment of DSU, appointment of a Director and Deputy Director, and location of office space for the Central Office. In the early days, a UNC Resident Advisor should also be appointed, with approval of the Government of Kenya.

Arrangements will also need to be made for transfer of funds from AID/Kenya to the Government of Kenya. Presumably, the COK will establish a special account for use by DSU, and AID/Kenya will make an advance deposit in that account. Thereafter, expendi-

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tures from the account will be reimbursed by USAID upon presentation of payrolls and vouchers showing that disbursements have been made in accordance with the Project Agreement.

Once the UNC Resident Advisor has established residence in Kenya, an important early step will involve firming up plans for the research program, including reviewing the list of proposals with the Advisory Committee.

A study area must be selected to provide a basis of operations for the research on vital statistics. A team of two or three demographers and specialists from UNC may go to Kenya to assist in this important function and in making firm decisions on the research program. The study area or areas selected should provide an opportunity to test the measurement of vital events among several types of population groups and under different conditions. Certainly, both urban and rural areas should be included, probably both mountains and plains. Different tribal groups should be represented. The area or areas should not be so far from the Central Office of DSU that access is unduly difficult or expensive. Moreover, the study area should be sufficiently significant that the results obtained will, in themselves, be of value in the formation of national policy and in national planning.

It is much too early to consider designating a study area, but it is apparent from a demographic map of Kenya that the major concentrations of population are in and around Central Province, near Nairobi; Coastal Province, near Mombasa; and Nyanza and Western Provinces, near Lake Victoria. Perhaps one of these areas should be included, but, in addition, it would be desirable to include an adjacent, sparsely settled area. The boundaries of the study area should coincide with political boundaries, in order that census data for the area will be available.

Soon after the study area is designated, it will be necessary to select a representative sample of "clusters" of dwellings from which statistics of vital events will be developed. Detailed mapping of these clusters and the assignment of dwelling numbers may then proceed. Basic information regarding the area will need to be assembled, questionnaires and instructions drawn up, field staff recruited and trained, etc. It is anticipated that the first continuous surveillance can begin about six months after the effective date of the Project Agreement and the first retrospective household survey (following a field test) at the end of another six months.

After the first six months of operations related to the survey of vital rates has been completed, detailed plans for the first study, based on analysis of existing demographic statistics, will be made. The Advisory Committee will be consulted. The DSU will complete at least three of these studies during the first two years of the project.

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Following is a tentative timetable, showing the anticipated schedule for major activities during the first year:

- P.A. Effective date of Project Agreement
- P.A. + 1 mo. Formal creation of DSU
- Designation of DSU Director and Deputy Director
- Appointment of UNC Resident Advisor
- Submit specifications for purchase of major equipment
- P.A. + 2 mo. DSU Central Office established
- UNC Resident Advisor assumes duties
- Assembly of national maps and statistical materials
- Financial arrangements completed for transfer of funds to special account. Financial procedures agreed upon.
- Begin recruitment of Central Office Staff
- P.A. + 3 mo. Develop program of research
- Select study area for vital statistics (UNC team participates)
- Prepare frame for sample selection
- Begin work on questionnaires and instructions for vital statistics
- Appoint Advisory Committee
- P.A. + 4 mo. Select sample of clusters of dwellings
- Begin detailed mapping and numbering of dwellings
- Prepare training manuals
- Appoint Field Supervisor and Chief Analyst
- Develop program and priorities for analytical studies of existing data.
- P.A. + 5 mo. Establish field offices for vital statistics
- Seminars for senior DSU personnel
- Train and recruit field staff

- P.A. + 6 mo. Begin continuous surveillance in all clusters of dwellings
Develop detailed plans for first analytical study
- P.A. + 7 mo. Initiate first analytical study
Review status of project with UNC personnel
- P.A. + 8 mo. Complete preparations for final retrospective survey of vital statistics
- P.A. + 9 mo. Recruit and train field staff for retrospective household survey.
- P.A. + 10 mo. Conduct field test for household survey
- P.A. + 11 mo. Review results of field test for household survey and change research plan as necessary
- P.A. + 12 mo. First retrospective household survey
Review status of analytical studies with view to initiating additional projects.
- P.A. + 13 mo. First matching of results of continuous surveillance and retrospective survey
- P.A. + 14-
24 mo. Produce first vital rates for study area and establish measurement system on a continuing basis
Begin drawing conclusions from experimental studies of alternative methods, etc.

List of Research Projects Proposed to be Undertaken in the Second Phase of the Demographic Studies Unit Program

1. Analysis of the population by significant groupings - age, sex, source of livelihood, tribe, etc. - and by region, as a framework for establishing national goals.
2. Study of household composition, to reveal number of persons per household, household types, and tribal differences in households.
3. Variations in fertility rates of women, by economic group and by region.
4. Analysis of trends in causes of death.
5. Educational attainments of population by region compared with other countries.
6. Educational facilities per 1,000 population of school age by region compared with other countries.
7. Health and sanitary facilities per 1,000 population by region compared with other countries and with international standards.
8. Distribution of the population by type and adequacy of housing.
9. Projected numbers of children of primary and secondary school age by region throughout period of the development plan.
10. Estimated future requirements for schools and teachers to attain national goals.
11. Estimated future requirements for hospitals, doctors, nurses, midwives, and technicians to meet national goals.
12. Estimation of size and age-sex distribution of the future labor force as a basis for planning employment creating production.
13. Projected level of wage employment indicated by plan compared with probable size of nonagricultural labor force.
14. Indicators of future requirements for foreign workers in skilled jobs, based on continuing shortage of qualified local workers.
15. Study of families with more than one member employed or seeking work; effect on family incomes, etc.
16. Analysis of distances that workers live from work place, and type of transportation used.
17. Trends in infant mortality in relation to extension of health education and availability of health services.
18. Age at marriage in relation to education of mother, size of family.
19. Number and characteristics of nomadic populations.