

NUTRITION CRSP - KENYA PROJECT
PRELIMINARY SURVEY - INTERIM REPORT
September 30, 1982 - January, 1983

- I. Introduction
 - II. Study Area
 - III. Background Information
 - IV. Registration and Preliminary Survey
 Findings
 Population Information
 Stability
 Religion
 Tribe and Language
 Education
 - V. Health - Morbidity, Mortality, Household and Local Health Care Facilities
 - VI. Reproduction
 - VII. Anthropometry
 - VIII. Food Intake
 - IX. Activity
- APPENDIX A
- APPENDIX B
- APPENDIX C

Principal Investigators:

J. Kagia University of Nairobi
C. Neumann University of California, Los Angeles

Co-Principal Investigators:

N. Bwibo University of Nairobi
R. Gorsky University of California, Berkeley

Field work was carried out under the direction of:

E. Carter Research Nutritionist
 Acting Field Coordinator
D. Cattle Research Nutritional Anthropologist
A.A. Jansen Nutritionist, Co-Investigator
J. Kagia Principal Investigator, University of Nairobi
J. Meme Co-Investigator
S. Kinote Co-Investigator
N. Bwibo Co-Principal Investigator
- Mr. Ben Senior CBS Supervisor
Field Enumerator Staff and Supervisors

Acknowledgements:

Mrs. Ann Pertet -Nutritionist
Ms. Shiela Likani -Nutritionist, for assistance with Food Intake training
Principal of Kyeni Girls' High School for use of school facilities for
recruitment and training

KENYA NUTRITION CRSP PROJECT

I. INTRODUCTION

Although notification of award for the Nutrition CRSP was on September 1, 1981, concurrence for the Kenya Project by the Kenya USAID mission was not forthcoming until November 1981. This was obtained during the trip by Drs. Neumann and Hornstein who presented the study to the new health director, Dr. Rose Britanek and AID staff in Nairobi. Certain questions and reservations were discussed and upon satisfactory resolution of these points, USAID Kenya gave their official approval for the project.

Chronology

1. USAID Kenya mission concurrence - November 1981
2. University of California Management Entity agreement with UCLA, and inter-campus agreement, and transfer of funds from the Management entity on the Berkeley campus to the UCLA campus was made in the winter of 1982. A similar arrangement was made with the UC Berkeley project group.
3. Subcontract with the University of Nairobi - Finalization was delayed until now because of the recent disturbances in Kenya and closing of the University. A portion of the University of Nairobi budget needed to carry out the preliminary survey from August 1982 through January 1983 was advanced to the California field staff with the written concurrence of the Kenyan Principal Investigator, Dr. James Kagia. This interim arrangement enabled project field work to proceed.
4. Aerial photography, staff recruitment and training, household registration and recruitment were initiated in late September 1982.

5. Data analyses from the first 143 households was carried out in November 1982.

6. Duty-free status for incoming research supplies and equipment - The request and documentation by the Ministry of Finance, Kenya and a letter granting these privileges has been obtained from the Minister of Finance in 1982.

7. Memoranda of understanding in regard to authorship and working arrangements between the co-principal investigators of the University of Nairobi and the University of California and Staffs have been drawn up and finalization awaits discussion.

II. Finalization of University of California and University of Nairobi research teams and counterparts by area of interests and functional areas. Counterparts in each of the functional areas have now been identified and exchange of ideas about the studies in each of the functional areas is in progress. The University of California team will visit the field sites and laboratories as deemed necessary for training of local staff as well as for methodological considerations (January - April 1983). Please see Table 1 for a list of researchers and counterpart relationships.

Collaborating institutions and offices (in addition to the medical school faculty)

Ministry of Health, Government of Kenya - Dr. S. Kanani, head of rural and primary health, maternal and child health and nutrition.

Provincial Medical Officer, Dr. Oyoo, Eastern Province - He has offered logistic support at the Karurumo Rural Health Training Center. This center has contributed two offices, waiting space and one residence for project use.

Ministry of Economic Planning and Finance - Central Bureau of Statistics (CBS) - Central and Eastern province offices. There has been sharing of

Counterparts

	<u>University of Nairobi</u>	<u>University of California</u>
Principal Investigators	J. Kagia	C. Neumann (UCLA)
Co-Principal Investigators	N. Bwibo	TBN (UC Berkeley)
Field Coordinator	TBN	TBN (E. Carter acting)
Data Management/Epidemiology	E.F. Njeru	A. Cou]son
Statistics	TBN	A. Afifi
Nutritional Status Food Intake	A.A. Jansen S. Kinote	E. Carter D. Cattle 3rd nutritionist (TBN)
Work Performance Activity	Thairu	G. Gardner
Reproduction Lactation	A.A. Jansen N. Bwibo	E. Carter
Cognitive School Performance	J. Meme TBN	E. Werner
Social Performance Socioeconomic	TBN	C. Carr
Administrative Staff	TBN	F. Carter (Embu) TBN

TBN - To be named

training materials, census data, loan of 3 field workers and a senior supervisor from the recent census and nutrition survey to help with the training of the Kenya project staff. The sharing of previous nutrition survey data and maps has been done extensively. The Nutrition Coordinating Unit under Mr. Wasonga has been contacted on several occasions and was kept informed of the project.

Kenya Medical Research Institute - Dr. Steve Kinoti a physician and nutritionist, associated with the project from the Pediatric Department is now new director. In regard to the Kenya project, he will allow the project to use his technical staff and laboratory for food composition analysis, biochemical analysis, breast milk composition and urine studies.

Computer Center, University of Nairobi - There is a well-equipped, well-staffed large computer facility with ample storage capacity. The director is Professor Scott. The system is an ICL British computer system but the tapes are compatible with IBM and there are many programs available which can be translated for IBM use. SPSS is used extensively.

Professor Scott, professor of Biostatistics is in charge. A student about to earn a Bachelor of Science in Statistics and Computer Science has been hired to work with our data for preliminary analysis under the direction of Dr. Scott and his staff.

Ms. Ann Coulson, of UCLA will go to Kenya in February to evaluate the computer capabilities in terms of the definitive study and the training needs of Kenyan staff in data handling.

Ministry of Education - The Office of Educational Research is to be involved in studies of school performance in relation to food intake and nutritional status.

Institute of Developmental Studies (IDS) - University of Nairobi will assist with some of the socio-economic survey and household productivity studies.

II. STUDY AREA

Selection of Potential Study Area

The Ministry of Health and the Department of Community Health at the University of Nairobi School of Medicine feel that Embu District Eastern Province is a suitable research area for the following reasons:

1. No other large scale health or nutrition study is going on in that area.
2. A desire on the part of the Ministry of Health to increase the nutrition awareness in Eastern Province.
3. Convenient distance of Embu District from Nairobi. Embu is about 100 miles northeast of Nairobi on a paved highway. Embu is far enough away so that a large percent of the heads of households or the males are not apt to be working in Nairobi. Logistically it is close enough so that laboratory support is possible and University of Nairobi staff can come to the field site easily.
4. There is no severe malnutrition on a large scale but rather mild and moderate malnutrition as disclosed by the Central Bureau of Statistics) (CBS) Nutrition Survey of 1979.

Embu District is an area mainly of subsistence agriculture and in addition grows some cash crops such as coffee cotton, tobacco and tea. The area varies from semi-arid, sparsely settled and to the highlands that are more fertile populated and were fertile. Three sublocations were picked in Kyeni location because of the relatively dense population (although the households

are somewhat scattered). This is not exclusively a semi-arid area nor is it a pure cash crop area raising only coffee and tea, but rather an area of mixed agriculture raising maize, sorghum beans and millet.

The tribal makeup of the area is fairly uniform, the people being mainly Kiambu and the language being spoken is mainly Kiambu although Swahili and Kikuyu are widely understood as is English.

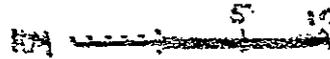
There is a cooperative, enlightened, principal provincial medical officer (PMO) with an interest in nutrition as well as a very progressive district commissioner and chief of Kyeni location who are very supportive of the work. Also the presence of Karurumo Rural Health Training Center is a big asset as this training center under the PMO and Ministry of Health offers logistic support and general backup facilities for medical care, two offices and a residence.

Summary of Criteria for Selection of Embu district-Kyeni Location for Field Study Area.

1. Stability - on basis of preliminary evidence, this is a:
 - a) low migration rate
 - b) moderate labor translocations for adult males (a characteristic of the Kenyan situation) when the areas are closer to Nairobi
 - c) politically and socially stable area.
2. Homogeneity
 - a) small tribal differences, mainly Kiambu tribe - few members of other tribal groups.
 - b) health facilities - fairly near or at the periphery of the study area.

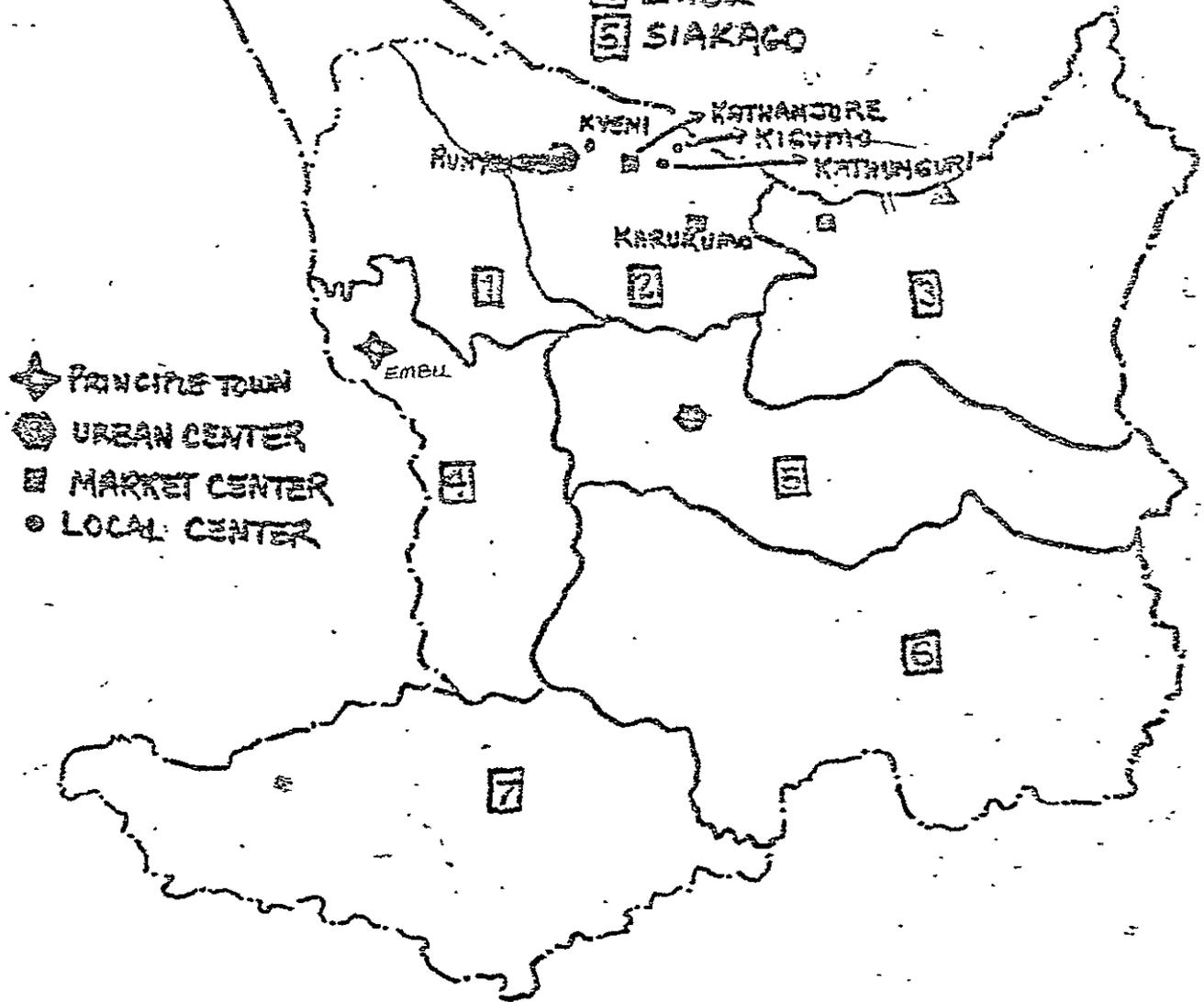
EMBU DISTRICT

EMBU DISTRICT



RURAL HEALTH UNITS

- 1 RUNYENJES
- 2 ISHARA
- 3 EMBU
- 4 SIKAGO



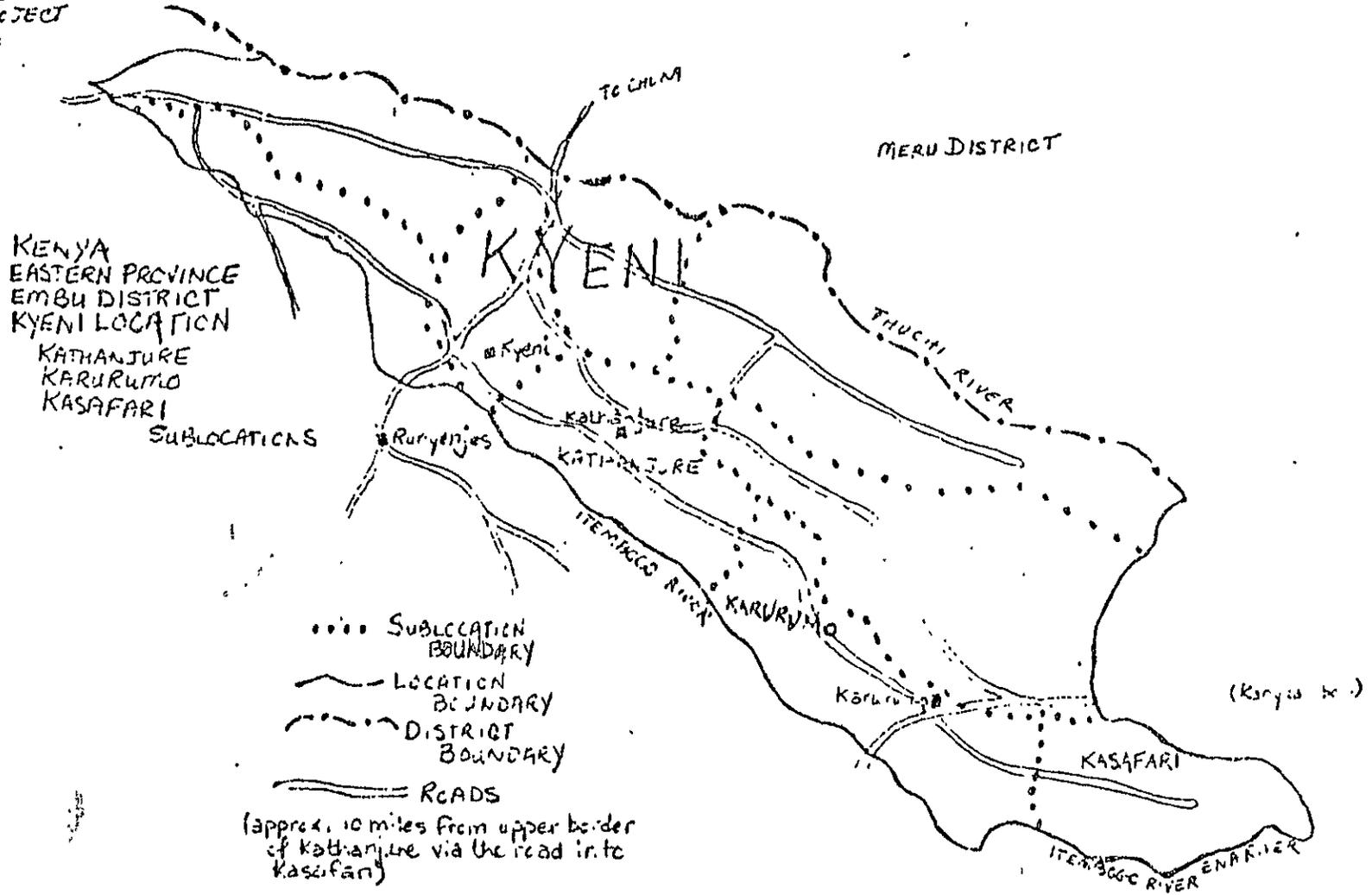
- ◆ PRINCIPLES TOWN
- URBAN CENTER
- MARKET CENTER
- LOCAL CENTER

Base map from EMBU DISTRICT
DEVELOPMENT PLAN 1979-83.
(January 1980)

djc
25/10/80

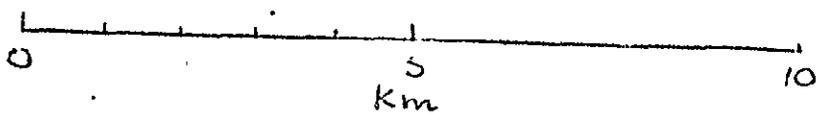
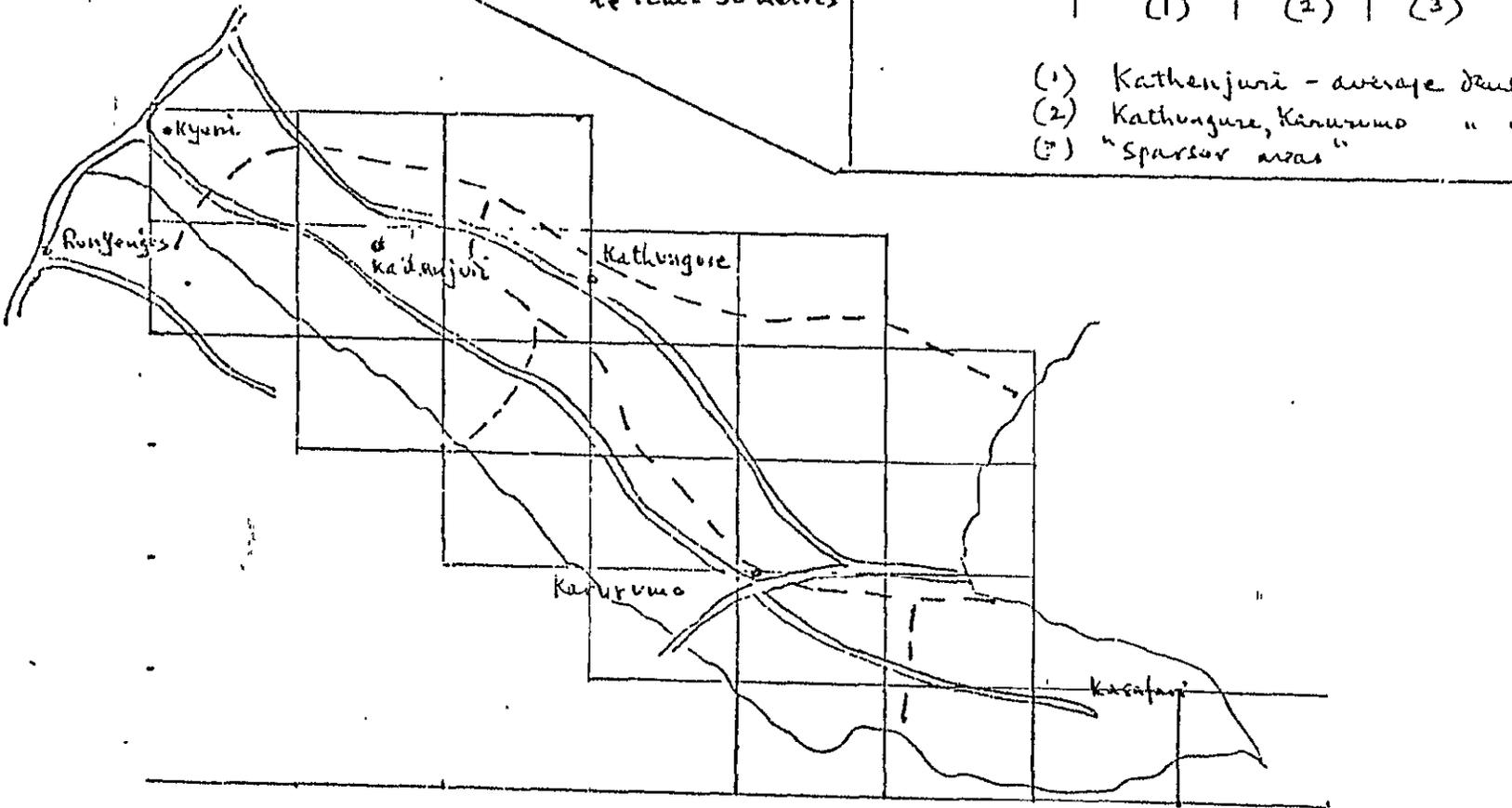
Nairobi (120 mi SW)

NUTRITION CRSP
KENYA PROJECT
4/13/82 d/c



AREA COVERED ON PAGE-SIZE MAP (20 X 15 cm)		SCALE	DIMENSIONS	No. of the CUM MAP		
				DENSITY 800/km ²	DENSITY 250/km ²	DENSITY 120/km ²
		1:10,000 ie 1cm = 100 metres	2 x 1.5 km (3sq km)	300	150	75
		1:5000 ie 1cm = 50 metres	1 x .75 km (.75sq km)	.75 (1)	40 (2)	20 (3)

- (1) Kathenjuri - average density
- (2) Kathungure, Karurumo " "
- (3) "Sparsely areas"



1:100000

3) Appropriate Size

There are about 1200 households in the study area, an adequate base from which to select the 600-700 households for the preliminary survey. The area poses an environmental gradient from semi-arid to more fertile and better watered highlands.

4) Appropriate Range of Nutritional

1. On the basis of reported anthropometric measurements from a rapid survey by the University of Nairobi and University of California team (see Tables 2 and 3) and in discussions with local health personnel, we expect to find an appropriate range of nutrient intake and nutritional status.
2. Well-nourished and moderately malnourished groups are available. Severe PEM is not widespread.

5) Reproductively-active females, pre-school and school-age children are well represented.

6. Infrastructure

1. local governmental and health personnel and community organizations and leaders have expressed interest and support of project:
2. logistics appear adequate.

7. Potential Problems

anticipate unstable malaria situation (malaria increases during rainy season and decreases during dry season). Malaria is present throughout Kenya. Intestinal parasites are also ubiquitous.

TABLE 2

RUNYENJES HEALTH CENTRE 7/4/82

Children attending morning malnutrition clinic and afternoon well-baby clinic were weighed and measured.

LENGTH FOR AGE (SD SCORE) [(Σ), %]

AGE (mos)	More than -1	-1to-1.99	-2to-2.99	≤ -3	TOTAL
0 to 5.9	(11) 17%	(6) 9	(1) 2	0	(18) 27%
6 to 11.9	(3) 5	(6) 9	(3) 5	(5) 8	(17) 24
12 to 23.9	(6) 9	(3) 5	(4) 6	(3) 5	(16) 24
24 to 47.9	(1) 2	(1) 2	(1) 2	(7) 11	(10) 15
48 up	(1) 2	(1) 2	0	(3) 5	(5) 8
TOTAL	(22) 33%	(17) 26	(9) 14	(18) 27	$\Sigma = 66$

WEIGHT FOR LENGTH (SD SCORE) [(Σ), %]

AGE (mos)	More than -1	-1to-1.99	-2to-2.99	≤ -3	TOTAL
0 to 5.9	(15) 21%	(3) 5%	0%	0%	(18) 27
6 to 11.9	(12) 20	(4) 6	(1) 2	0	(17) 24
12 to 23.9	(6) 9	(7) 11	(3) 5	0	(16) 24
24 to 47.9	(3) 5	(4) 6	(3) 5	0	(10) 15
48 up	(3) 5	(1) 2	(1) 2	0	(15) 8
TOTAL	(39) 59	(19) 29	(8) 12	0	$\Sigma = 66$

LENGTH FOR AGE (SD SCORE) [(Σ), %] (Wasted + Stun.)

WEIGHT FOR LENGTH (SD SCORE)	More than -1	-1to-1.99	-2to-2.99	≤ -3	TOTAL
(SD SCORE)	(15) 23	(11) 17	(6) 9	(3) 12	(40) 61
More than -1	(5) 8	(5) 8	(1) 2	(6) 9	(17) 26
-1to-1.99	(2) 3	(1) 2	(2) 3	(4) 6	(9) 14
≤ -3	0	0	0	0	(0) 0
TOTAL	(22) 33	(17) 26	(9) 14	(18) 27	

* SD SCORE BASED ON THE WHO/NCHS REFERENCE DATA

$n=71$, $Q=34$ (48%), $Q2=32$ (45%)

TABLE 3

KARURUMO HEALTH CENTRE 8/4/82

Children attending morning MCH clinic were weighed and measure

LENGTH FOR AGE (SD SCORE) (), %

AGE (mos)	More than -1	-1to-1.99	-2to-2.99	≤ -3	TOTAL
0 to 5.9	(10) 31%	(2) 6	0	0	(12) 33%
6 to 11.9	(2) 6	(2) 6	(2) 6	0	(6) 19
12 to 23.9	(2) 6	(2) 6	(1) 3	0	(6) 16
24 to 47.9	(1) 3	(2) 6	(5) 16	0	(8) 25
48 up	0	0	0	(1) 3	(1) 3
TOTAL	(15) 47%	(8) 25	(8) 25	(1) 3	≤ 32

WEIGHT FOR LENGTH (SD SCORE) [(Z), %]

AGE (mos)	More than -1	-1to-1.99	-2to-2.99	≤ -3	TOTAL
0 to 5.9	(6) 19	(2) 6	(1) 3	(3) 10	(12) 39
6 to 11.9	(4) 13	(2) 6	0	0	(6) 19
12 to 23.9	(2) 6	(2) 6	(1) 3	0	(5) 16
24 to 47.9	(3) 10	(1) 3	(1) 10	0	(7) 23
48 up	(1) 3	0	0	0	(1) 3
TOTAL	(16) 52	(7) 23	(5) 16	(3) 10	= 31

LENGTH FOR AGE (SD SCORE) [(Z), %]

WEIGHT FOR LENGTH

(Wasted with stunted)

(SD SCORE)	More than -1	-1to-1.99	-2to-2.99	≤ -3	TOTAL
More than	(6) 19	(3) 10	(5) 16	(2) 6	(16) 52
-1to-1.99	(5) 16	(2) 6	0	0	(7) 23
-2to-2.99	(1) 3	(2) 6	(2) 6	0	(5) 16
≤ -3	(3) 10	0	0	0	(3) 10
	(15) 48	(7) 23	(7) 23	(2) 6	

n=34; Q=20 (59%). O=14 (41%).

For a full description of the characteristics of the area, please see appendix A.

III. BACKGROUND INFORMATION

Universe Definition

The universe will include part or all of the following sublocations excluding the Central Bureau of Statistics (CBS) enumeration area (see appendix A for description).

- 1) Kathanjuri
- 2) Karurumo
- 3) Kathangure

The procedure to delineate the population includes mapping and registration of all households in the study

Name of communities	Kyeni Location	Sublocations Kururumo Kathunguri Kathanjure
Number of communities to be studied	3 or 4	
Total population of community(s) 11,810 - 1979 census	9,000 (about 1200 households)	

The population figures from the 1979 census by sex and sublocation are as follows:

	Male	Female	Total	# of Household
EMBU DISTRICT	127,867	135,306	263,173	50,241
RUNYENJES DIVISION	71,969	76,162	148,131	25,291
KYENI LOCATION	14,896	16,049	30,945	5,073

Sublocations

KATHANJURE	2,334	2,499	4,833	799
KATHUNGURI	1,772	1,964	3,736	681
KARURUMO	1,610	1,631	3,241	579
Subloc. Totals	5,716	6,094	11,810	2059

The area of each sublocation is 8, 16, and 17 sq. kms. respectively.

Population densities are 569, 220, and 182 per sq. km.

Distance from capital city Nairobi - 120 miles northeast

Embu (provincial capital) - 10 miles

Driving time from capital city Nairobi - 2 1/2 hours; Embu - 20 minutes

Altitude 1020-1460 m (3060-4380 ft)

Distance to nearest market Local markets held 1 day/week at various
locations and various local rural shops
(3-15 km)

Local road surfaces On periphery tarmac and all-weather dirt
road and small dry-weather dirt roads
- criss-crossing the area

Distance between houses 200-2000 meters

SOCIOCULTURAL

Major occupations	agriculture
Other occupations	few
Proportion subsistence households - most;	Source of income (one sublocation):
Proportion mixed economy households - 1/2	salary 13%
Proportion cash economy households - 1/3	cash crop 47%
	business 4%
	subsistence 25%
	Other 10%
Migration or commuting patterns	
-- degree	very low migration
-- frequency	no pattern
-- who	male adults; but 50% HH heads do not leave or migrate for > 3 months
-- where (distance)	Nairobi and occasionally Mombasa

AGRICULTURAL

Major crops grown (% land)	85% - maize, millet, sorghum, beans, peas
Cash crops	tea, coffee, tobacco, cotton
Other crops	banana, potato, tomato, cassava, pumpkin, taro, sugar cane
Planting season	roughly coincides with wet seasons
Harvest season	September-October; March-April
Wet seasons	Winter: November-December; Spring: April-June
Dry seasons	July-October; January-April
Irrigation	rare
Temperature	Warm - 85-88° January-February Cool - 75-85° June-August
Degree of mechanization	negligible
Household gardens	rare, fields surround houses
Livestock	cattle, goats, oxen, donkeys, chickens

HOUSE STRUCTURE, ETC.

Walls	Mud, sun-dried brick, wood, tin, stone (mainly mud)
Roof	Thatch, tin, tile, (mainly thatch)
Floors	Dirt, some cement
Windows	0-3 - no glass or screen
Average number of rooms	1-2 rooms
Water supply	Tap (25-75%); river stream (25-75%)
Toilet inside	0
Latrine or septic tank	0-84% have latrines by sublocation
No toilet	100%
Radio	few
Television	0
Newspapers	few

IV. Preliminary Survey (PS) of 143 Households (HH)

A preliminary household survey was started in late September and is still in progress, the goal being to survey about 700 households (HH). The final study sample will be selected from this universe.

Incomplete maps and the fast approach of the November deadline made us select the HH to be visited in each sublocation solely on the basis of easy logistics. In other words none of the households were chosen by random selection.

KATHANJURE: Most of the HH visited formed part of a 'village' somewhat unusual given the absence of such gatherings of households in this part of Kenya. This is an outcome of the colonial emergency policy of rounding up people into protected areas. At the end of this period the people went back to their land. Those without land were given small plots of land some distance from their homes.

KATHUNGURI: The HH visited in this sublocation were more typical of the area

as a whole as were the HH in Karurumo. In this third sublocation more arid than the others, the HH were more scattered requiring longer travelling periods by the field-workers.

The data collection for the PS was done by field workers working in pairs, one questioning the respondent and the other assisting. For the food weighing pilot, field workers worked individually. Typically six field workers were supervised by one person.

The supervisors were chosen from the most promising of the field workers after about 4 weeks of observation by the senior staff. There are 18 field workers and 3 supervisors that have 'specialized' in food intake studies. Since the supervisors were 'elevated from the ranks' they have no more experience than the field workers and also need a lot of supervision. It is not inconceivable that at some stage during the remainder of the study some of the supervisors will be demoted and replaced by field workers with more promise. Senior staff depend greatly on the supervisors and more effort is to be spent on making them aware of their roles and responsibilities.

Field Trial

- One week was spent in this in an adjoining sublocation (Kigumo) trying out all aspects of the PS including filling the food intake forms. This enabled us to correct mistakes and start the PS more effectively.

FINDINGS - Based on 143 Households

Population Surveyed

<u>Sublocation</u>	<u>Population</u>	<u>No. Households</u>
Kathunjure	321	47
Kathunguri	330	46
Karurumo	336	50

(See population pyramids, Figures 1,2,3)

Household - Working definition

People live in compounds which are scattered and with the exception of one section of Kathunjure, are not arranged in compact villages. A compound

PERCENTAGE OF FEMALES OUT OF TOTAL POPULATION OF 330

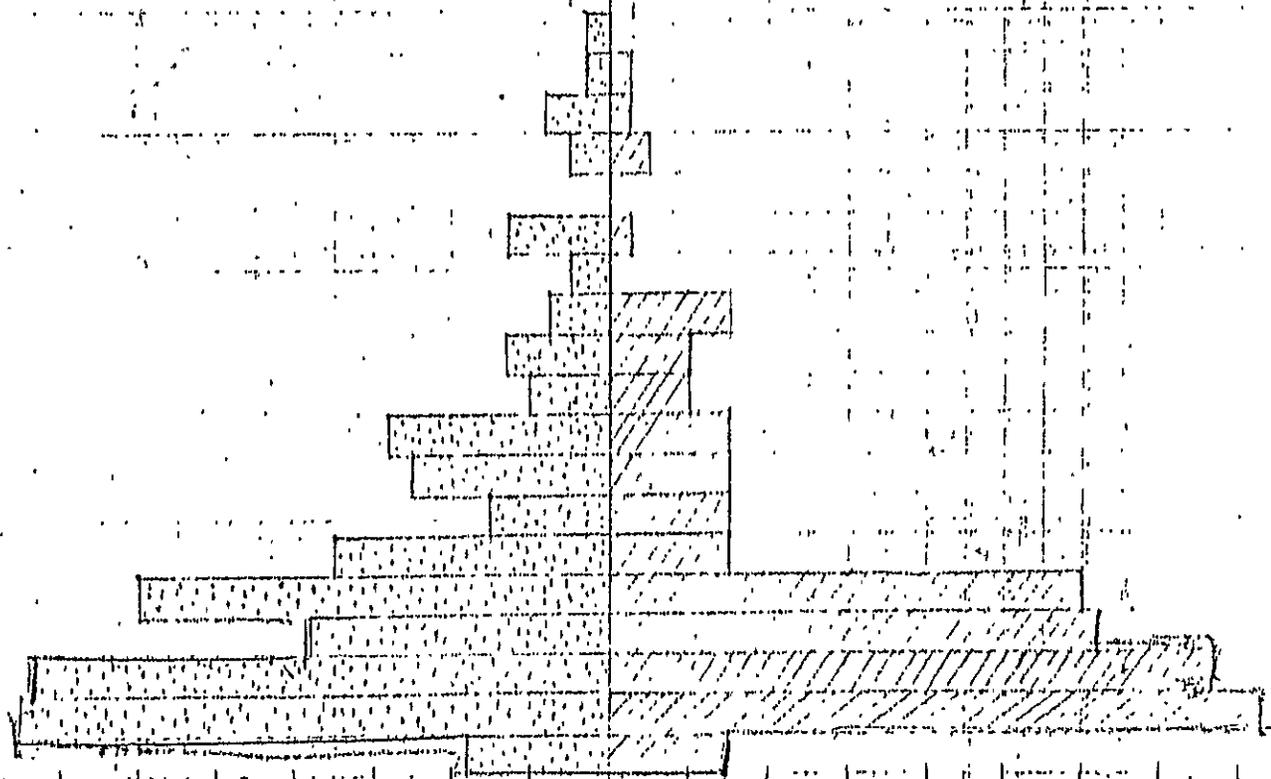
PERCENTAGE OF MALES OUT OF TOTAL POPULATION OF 339

$$\frac{168}{330} \times 100 = 50.9\%$$

$$\frac{169}{339} \times 100 = 49.1\%$$

TOTAL NUMBER AGE

0	96-100
0	91-95
1	86-90
2	81-85
4	76-80
7	71-75
0	66-70
6	61-65
2	56-60
9	51-55
9	46-50
8	41-45
13	36-40
16	31-35
12	26-30
20	21-25
48	16-20
40	11-15
60	6-10
63	1-5



48 44 40 36 32 28 24 20 16 12 8 4 0 4 8 12 16 20 24 28 32 36 40 44 48
NUMBER OF INDIVIDUALS

POPULATION PYRAMID FOR TOTAL POPULATION OF NLANJANJURE SUBLOCATION ON 10/10/1998
 Scale: VERTICAL: 1 inch = 1000 people HORIZONTAL: 1 inch = 100 individuals

FEMALE

MALE

BEST AVAILABLE

PERCENTAGE OF FEMALES OUT OF TOTAL POPULATION OF 321 IS

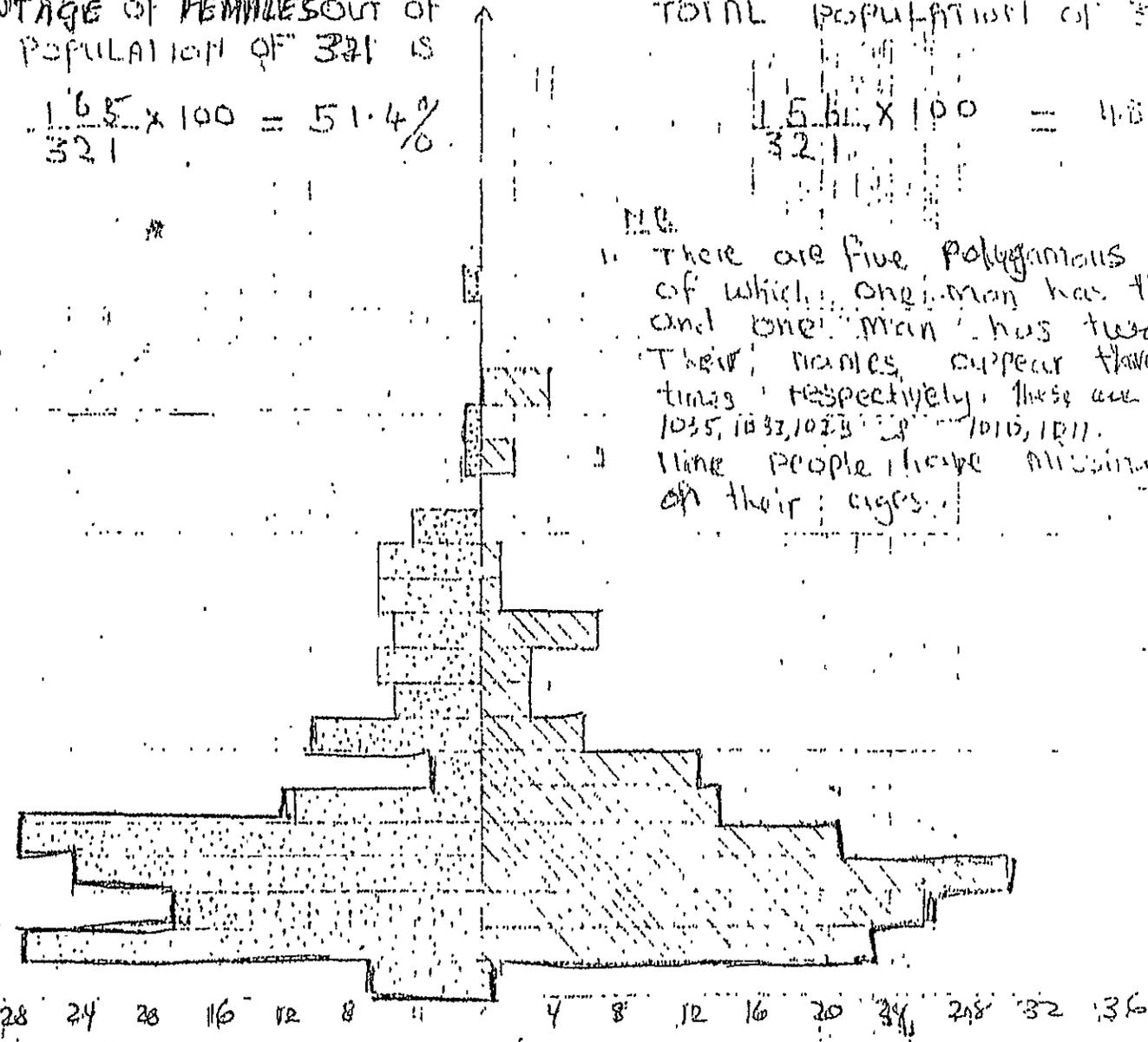
$$\frac{165}{321} \times 100 = 51.4\%$$

PERCENTAGE OF MALES OUT OF TOTAL POPULATION OF 321 IS

$$\frac{156}{321} \times 100 = 48.6\%$$

NUMBER AGE

1	96	-	100
0	91	-	95
0	86	-	90
4	81	-	85
1	76	-	80
3	71	-	75
0	66	-	70
4	61	-	65
7	56	-	60
7	51	-	55
2	46	-	50
9	41	-	45
8	36	-	40
6	31	-	35
4	26	-	30
5	21	-	25
8	16	-	20
5	11	-	15
4	6	-	10
0	1	-	5
7		-	1



NOTE:
 1. There are five polygamous households of which one man has three wives and one man has two wives. Their names appear three and two times respectively. These are the heads: 1035, 1032, 1023, 1010, 1011.
 None people have missing information on their ages.

NUMBER OF INDIVIDUALS

PYRAMID OF TOTAL POPULATION OF KURUZUMU SUBLOCATION DISTRICT AND FAMILIES
 MARABEL KINA AND JANE WAMBUI

C. N. 1111

23/11/67

FEMALE SCALE VERTICAL: 1 small sq. REP. 1 AGE GROUP
 HORIZONTAL: 1 small sq. REP. 2 individual

PERCENTAGE OF FEMALE OUT OF TOTAL POPULATION OF 336

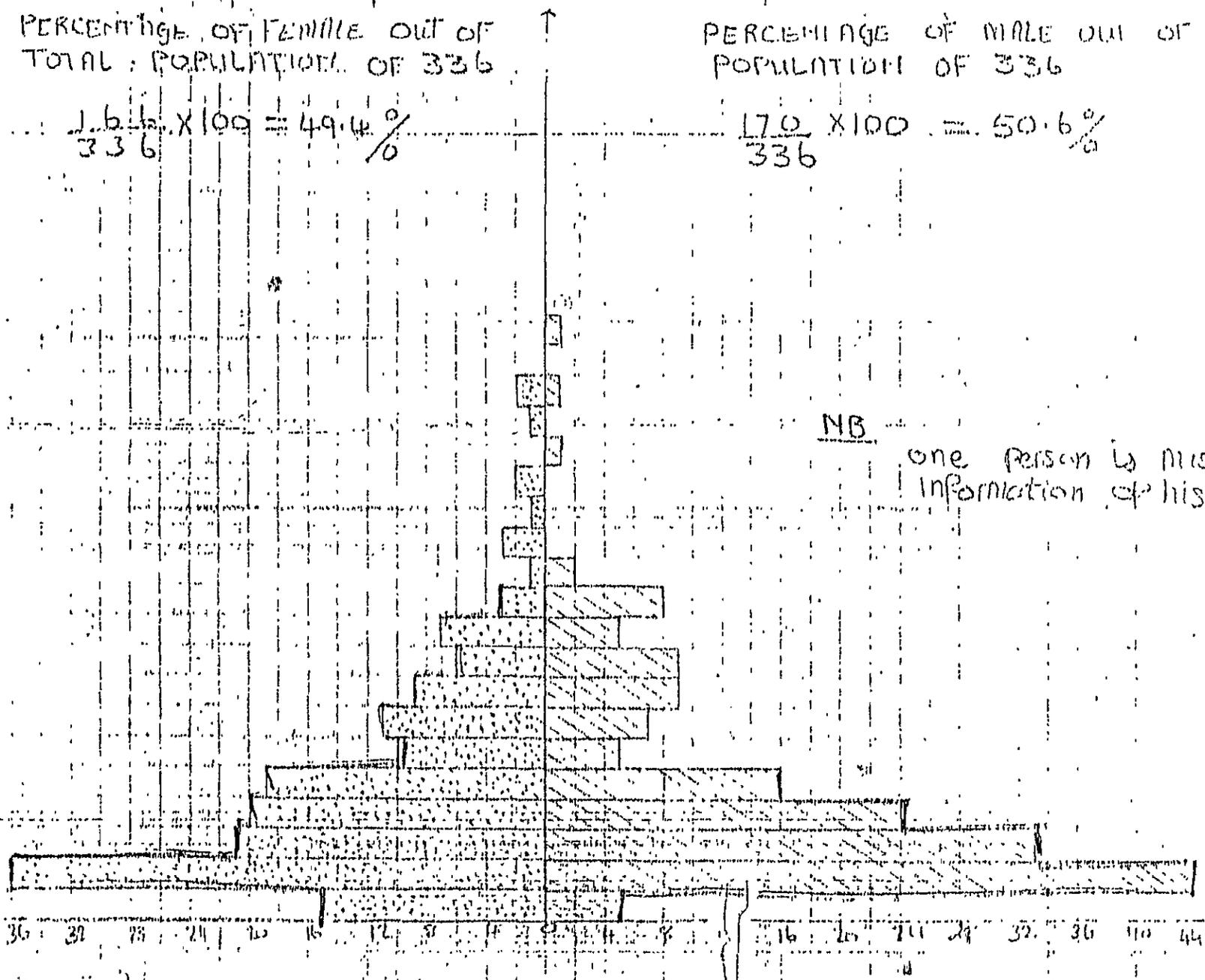
PERCENTAGE OF MALE OUT OF TOTAL POPULATION OF 336

$$\frac{166}{336} \times 100 = 49.4\%$$

$$\frac{170}{336} \times 100 = 50.6\%$$

TOTAL AGE GROUP

- 96 - 100
- 91 - 95
- 86 - 90
- 81 - 85
- 76 - 80
- 71 - 75
- 66 - 70
- 61 - 65
- 56 - 60
- 51 - 55
- 46 - 50
- 41 - 45
- 36 - 40
- 31 - 35
- 26 - 30
- 21 - 25
- 16 - 20
- 11 - 15
- 6 - 10
- 1 - 5



NB: one person is missing information of his age

NUMBER OF INDIVIDUALS

Household- Working Definition (continued)

may contain varying numbers of households from one to several. A household is defined (tentative) as a nuclear or extended family living together: sharing cooking, eating, sleeping facilities, economically interdependent, and recognizing the same head of household.

Household Data

Operating definition of "household"	Sharing of cooking, eating; living, sleeping aspect helpful
Nuclear families, %	54% (25% female head; 75% male head)
Extended family, %	46%
Polygamous family, %	4% (0-11%)
Average HH size	7 (16%- 10 or more, 43%- 6)
Range of HH size	1-16 people

Sublocation	Total No. of HH	Number of Female headed HH	Percent of Female Headed HH
Kathanjuri	47	15	32%
Kathunguri	46	11	24%
Karurumo	50	10	20%
TOTAL	143	36	25%

Sublocation	Total No. of HH	No. of Poly-gamous HH	Percent of Polygamous HH
Kathanjuri	47	5	11%
Kathunguri	46	None	0%
Karurumo	50	None	0%
TOTAL	143	5	4%

Age Composition of Households

Children - % of HH having children in the various age groups

Number	0-11 mos.	12-23 mos.	24-36 mos.	36-59 mos.	5-12 yrs.	13-17yr
0	74%	75%	70%	52%	33%	44%
1	26%	22%	29%	42%	22%	25%
2	1%	1%	1%	6%	23%	21%
3					23%	81%
4					7%	2%
5					2%	
7					1%	

At least one 0-2 yr. child 70%

At least one 2-7 yr. child 50%

0-2 yr. and 7-10 yr. (one each) 59%

0-2 yr., 7-10 yr., and teenager 50%

Adults

Number	Males > 18 yrs.	Males > 55 yrs.	Females > 55 yrs.
0	15%	73%	73%
1	59%	19%	19%
2	17%	76%	8%
3	5%		
4	4%		
5	1%		

Age determination was a problem. Although identification was often available, the age was often wrong. Use of events calendars is needed. Birth and family records were available in 40-50% of children < 5 yrs. as confirmatory records. These were most accurate for children 0-2 yrs.

MARITAL STATUS: Marital status is reported here for two sublocations. In Kathanjure, for males aged 15 & over, 25 males in the 15-19 age group were single (no other status for this age group); in the 20-29 group 25 males were single and 5 were married. The same information for Kathunguri is 30 males in the 15-24 group were single and 3 were married; in the 25-34 group 1 was single and 11 married. Out of 143 men in the two sublocations aged 15 and older, there was only one widower and the only categories of marital status reported were single and married.

For females in the two sublocations (aged 12 and older), the same information follows; in Kathanjure, in the 12-19 group, 34 are single, 1 is married; in the 20-29 group, the figures are 7 & 6 respectively. There are 15 widows and 2 divorced women in the 95 women surveyed in Kathanjure. In Kathunguri, 40 women aged 12-22 were single and 4 married; those in the 23-32 group were 6 single & 7 married; there were 11 widows and 2 divorced women out of 92 females surveyed.

Stability of the Population

Because the research is a longitudinal study it is essential that the study area have a low migration rate. Stability of the population was assessed in several ways, and all findings point to a stable population with low migration and labor translocation.

The Central Bureau of Statistics (CBS) carried out a census in 1979, including most of the study area. It was found that 84% of HH enumerated were included in the 1979 census and 16% were not.

By sublocation, % of HH not covered by 1979 census:

Kathanjare	9%
Kathunguri	11%
Karurumo	26%

Karurumo is an area of the most recent migrants who received parcels of land. The in this population sublocation tends to be younger than that of the two others.

Length of residence of the head of household in a sublocation (median- 4 years):

	Mean (yrs)	Range (yrs)
Kathanjare	12	0.3-50
Kathunguri	14	0.5-5
Karurumo	8	0.4-22

Time spent by the household head outside the sublocation in the past year:

No time outside	79%
Less than one month	21%

Percent of males over 18 yrs. outside sublocation in past year:

No time	74%
1 month	4%
1-3 months	1%
4-6 months	1%

People (HH members) outside sublocation in past year:

Number of people	
0	59%
1	18%
2	10%
3	5%
4	2%
5	4%
6	1%

Major Religions - Protestant/Roman Catholic
Very few Muslims or Traditional Religions

Churches/denomination in 3 sublocation:

	Kathanjura	Kathunguri	Karurumo
Roman Catholic	X	X	X
African Inland Church	X		X
Pentecostal	X	X	X
Salvation Army	X	X	X
Church of Province of Kenya	X	X	X
New Apostolic	X	X	X
Independent	X	X	X
Israel	X		
Jehovah's Witness	X		
Faith	X		
Kenya Family	X		
Full Gospel	X		X
Baptist	X		
Seventh Day Adventist			X

Tribe - Predominantly Kiambu 95%, Kikuyu 2%, Other 3%.

Tribal background of head of household

Sublocation	Embu	Kikuyu	Mbere	Kamba	Menu
Kathanjire	25	2	1	2	2
Kathunguri	33	2	1	0	0
Karurumo	37	4	1	0	0

LANGUAGES SPOKEN: The predominant language is Kiambu, followed by Kiswahili, English, and Kikuyu. Kathunguri has the highest percentage of Kiswahili and English speakers (as second or third languages) among male heads of households. This also holds true for the population aged 20 and over. Residents of both Kathanjire and Kathunguri speak 2 to 3 languages; for Karurumo, about 2 languages is the average.

English

Over 90% of household members speak English in about 50% of the households studied.

<u>Age Group</u>	<u>No English</u>	<u>Median % English Speaking</u>
5-12 yrs.	33%	23%
13-17 yrs.	46%	24%
>18 yrs.	15%	--
>55 yrs.	73%	--

Education

Primary schools are numerous throughout all sublocations. There are only 1 or 2 secondary schools in the 3 sublocations. Schooling, although compulsory, is not enforced and attendance is poor particularly at harvest time. Literacy among males is reported as very high.

Schools and Total Number of Pupils (1979):

	Kathanjura	Kathunguri	Karurumo	Total
Primary schools	3	4	2	9
Number of pupils	1277	1853	1016	4146
Secondary schools		2		2
Number of pupils		512		512
Polytech schools			1	1
Number of pupils			187	187
University	1			1
Number of pupils	34			34

Highest school attended by adults (>18 yrs.):

	Male	Female
No schooling	13%	21%
Primary School	54%	45%
Secondary School	27%	15%
Technical School	3%	1%
University	1%	-

V. HEALTH

Facilities:	Hospitals	Consolata Hospital; mission hospital (private)- Kyeni location; Provincial Hospital (government)- Embu.
	Health Centers	Karurumo, Rynenjes; few mobile clinics; few dispensaries.

Morbidity Data (HH)

Seven day recall of illness of family members was obtained by questionnaire during the PS. Results are reported in accompanying table.

One Week Recall of Illness - 143 HH from Preliminary Survey

	<u>All Ages Total</u>	<u>0-11 mos.</u>	<u>12-23 mos.</u>	<u>24-35 mos.</u>	<u>36-59 mos.</u>	<u>5-12 yrs.</u>	<u>13-17 yrs.</u>	<u>18-54 yrs.</u>	<u>>55y</u>
Sick	50%	68%	58%	67%	53%	44%	36%	48%	83%
Fever	8%	8%	11%	12%	11%	7%	7%	7%	25%
Diarrhea	3%	18%	11%	5%	3%	2%	0	2%	0
Vomitting	3%	13%	11%	5%	3%	3%	1%	1%	2%
Stomach pain	9%	5%	6%	7%	9%	11%	7%	9%	19%
Skin	7%	11%	6%	16%	17%	8%	4%	3%	10%
Ear	2%	0	0	0	1%	2%	1%	2%	6%
Headache	16%	0	0	5%	8%	13%	16%	22%	33%
Cough/cold	25%	40%	44%	44%	33%	24%	13%	7%	31%
Pneumonia	2%	3%	3%	0	4%	3%	1%	2%	2%
Measles	0	0	0	0	0	0	0	0	0
Joint pain	10%	0	0	0	1%	5%	6%	5%	41%
Accident	3%	3%	0	5%	3%	1%	3%	3%	6%
Other	20%	11%	6%	14%	11%	12%	14%	27%	62%

Frequency of "Other Illnesses" Category

Reported by 143 Households - One Week Recall

	Karurumo n = 50HH	Kathanjore n = 47 HH	Kathunguri n = 46 HH
Sleeping Sickness	-	-	1
Anorexia	-	-	2
Neck	-	1	1
Convulsions	-	1	-
Chest Pain	21	16	17
Sore foot/leg	3	1	3
Back Pain	24	12	14
Body Pain	3	1	1
Eye	5	12	8
Bone Pain	1	-	1
Heartburn	-	2	1
Short of Breath	1	-	-
Teeth	1	3	3
Jaundice	-	1	-
Swelling Knees	1	1	-
Tonsils	2	4	1
Sore Throat	1	3	-
Dysuria	-	2	-
Fainting	1	3	-
Nose Bleed	-	1	-
Adult Swollen Legs	-	1	2
Crippled	1	-	-
Malaria (reported)	4	-	3
Breast Disease	-	1	-
Hookworm	1	-	-

Preliminary Survey

"Malnutrition": Physical Inspection of Mothers
and Children (0-5 yrs.)

<u>Age</u>	<u>Marasmus</u>	<u>Fat</u>	<u>Goiter</u>	<u>Edema</u>
0-11 mos.	0%	0%	0%	0%
12-23 mos.	0%	0%	0%	0%
24-35 mos.	0%	0%	0%	0%
36-59 mos.	1.4%	0%	0%	1.4%
13-17 yrs.	0%	0%	0%	0%
18-55 yrs.	0%	1%	2%	8%
≥55 yrs.	0%	0%	0%	0%

Major Illness Summary:

Anemia (per cent anemic) Hg measured in PS	36% of population (282) age: 0-11 mos. 30% 12-23 ys. 49% 24-35 43% 36-59 35% 13-17 33% 18-54 31%	(anemic = <10g % H
Parasites	hookworm, ascariis, amoeba reported from Health centers	
Malaria Thick smears - PS	4% of 74 people tested (2 toddlers, 1 adult) self-reporting is 30%	
Schistosomiasis	not checked; not reported	
Severe malnutrition	2-3% found on anthropometry; 2% adult women with goiter; kwashiorkor and marasmus cas found in provincial hospital	
Tuberculosis	reportedly high; not tested	
Others	Respiratory infections, conjunctivitis, diarrhea, "worms", skin, trauma	

Morbidity Pattern for Kathanjure Health Centre

Kathanjure Health Centre is in the middle of the study area. Of all patients reporting for various illnesses during the preliminary study period, the most frequently reported cases were respiratory infections, clinical malaria and conjunctivitis for both males and females for all ages. (Refer to table below).

About half the cases of respiratory infections and malaria occurred in childhood population 0-14 years, while trauma, dyspepsia, worms, headaches occurred more in the older people.

It is interesting that none of the cases preventable by immunization were diagnosed. The absence or presence of these cases needs to be further evaluated. Explanation could be non-peak time for measles; better coverage by Kenyan Expanded Program for Immunizations.

It is possible that ^{people with} severe diseases would have sought help from the hospital rather than the Health Centre.

As reported by patients at Kathanjure Health Centre:

Table of Frequencies of Top Ten Diseases for Females

<u>Disease</u>	<u>Kathanjure for All Ages</u>	
	<u>Male %</u>	<u>Female %</u>
Malaria	21.4%	30.3%
Respiratory Pneumonia Bronchitis Tonsillitis URTI CORYZA	39.7%	37.4%
Conjunctivitis	10.0%	6.3%
Stress Headaches	6.1%	4.7%
Trauma	5.0%	4.5%
Dyspepsia	5.0%	4.1%
Worms	3.7%	2.5%
Constipation	1.8%	2.1%
Sores	1.3%	1.8%
Diarrhea	1.1%	1.2%

Diseases or Reasons for Being at Kyeni Consolata Mission Hospital

By In-Patients' Age

<u>Disease</u>	<u>IN-PATIENTS' AGE</u>				
	<u>0-10</u>	<u>11-19</u>	<u>20-30</u>	<u>31-50</u>	<u>Over 50</u>
Malaria	14.3%	2.6%	5.6%	12.3%	12.0%
Respiratory tract infection	42.8	23.7	12.5	24.6	44
Ulcer-Gastritis	0	5.3	1.9	9.2	4
Arthritis/ Arthrosis	0	5.3	5.8	3.1	16
Anaemia	0	0	1.9	0	0
Asthma/Neurosis	0	0	0	1.5	8
Venereal Disease	0	0	0	1.5	0
Intestinal Worms.	0	7.9	8.7	1.5	4
Skin Disease.	14.3	0	3.8	6.2	8
Maternity (Delivery)	0	52.6	48.0	32.3	0
Maternity (other than Delivery)	0	0	9.6	6.3	0
Fracture	14.3	2.6	1.0	0	4
Other	14.3	0	1.0	1.5	0
TOTAL	100 %	100 %	100 %	100 %	100 %
No of people interviewed	(7)	(38)	(104)	(65)	(25)

Many patients suffer from Respiratory Tract Infection and Malaria. The majority of women between 18 and 40 years are in the hospital to deliver.

Many women who deliver at Kyeni have attended Ante-Natal Clinic (see Appendix 1.1 and 1.2) and later on have their children vaccinated against Small Pox, T.B., Polio, and Measles. Until 1977 also a Child Clinic, connected with the Catholic Relief Services, was operating in the hospital. This Child Clinic was closed for lack of personnel to run it and for other unclear reasons.

MortalityMortality as Reported by 145 HH for
12 Preceding MonthsAge

0-11 mos. - 7 households had 1 death
 12-59 mos.- 1 household had 1 death
 5 years - 6 households had 1 death
 1 household had 2 deaths

Causes of Death in Those Over 59 Months

<u>Frequency</u>	<u>Cause</u>	<u>Age</u>	<u>Sex</u>
1	Old age	85 yrs.	M
1	Tetanus	12 yrs.	M
1	? Disease	5 yrs.	M
1	Leg wound	48 yrs.	M
1	Chest pain	19 yrs.	F
1	Diarrhea	6 yrs.	M

VI REPRODUCTION

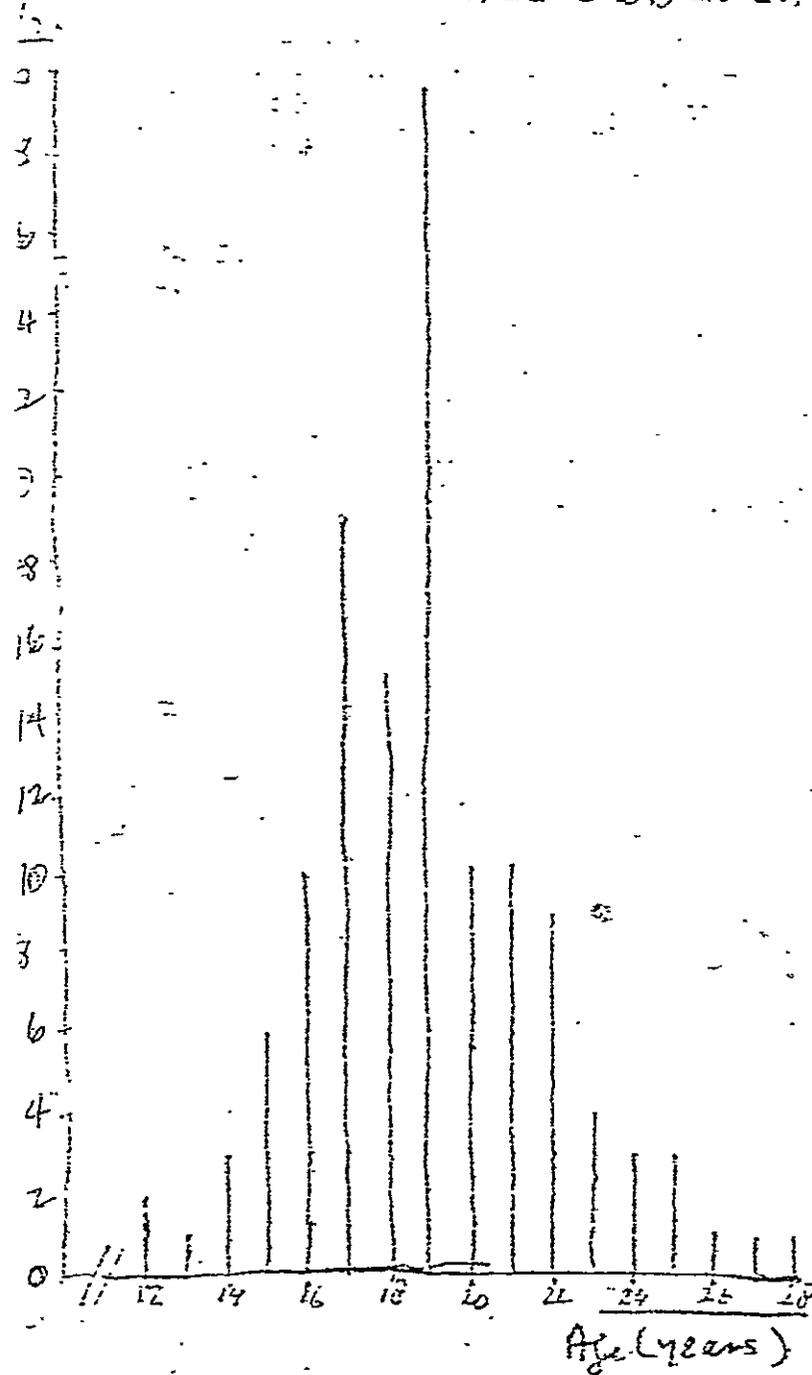
The design concerns gleaned from the TAG* report which relate to the presentation of figures/tabulations appear to be: number of women of reproductive age in surveyed population; age at birth of first baby; number of stillbirths; and perhaps infant and under 5's deaths, birth interval. There are also a number of tables presenting such data for the surveyed population and from records. The birth registers at Kyeni Consolata Hospital (Mission-run, fees charged), Runynjes Health Center, and Karurumo Rural Health Training Center were copied by A. Jansen and enumerators.

From preliminary survey census information:

	Kathanjura	Kathunguri	Karurumo
1. Average age at first baby	18.9 yrs.	19.2 yrs.	18.6 yrs.
No. of women	39	42	46
2. No. of women of reproductive age (approx.)	174	157	157

(*TAG = Technical Advisory Group)

Fig. 1. MATERNAL AGE AT FIRST DELIVERY.
(Frequency Distribution).
ALL SUBLOCATIONS



	Kathanjure	Kathunguri	Karurumo
3. Av. no. of babies (all age groups of reproductive age)	2.6 (average is low for Kathanjure because of large no. of 12-19 yr. olds who have not given birth)	5.5	5.4
4. Pregnancy rate	9.4%	14.3%	12.2%
5. No. of babies born dead	-	6	6

All sublocations

1. Average age at first baby: no. of women:	18.9 yrs. 127			
2. No. of women of reprod. age (approx.):	488			
3. Aver. no. of babies: per age group:	12-19 yrs 0.2	20-29 2.5	30-39 6.3	40-49 9.2
4. Pregnancy rate.	11.4%			
5. No. of babies born dead:	as above			

Information from Local Health Facilities

Birthweight.

Information on birthweights was collected at Karorungo Health Centre, Kyeni Consolata Hospital and Runyenjes Health Centre. As the information collected is hospital/health centre based, care should be exercised in the interpretation.

1. Karorungo Health Centre.

Table I provides information on birthweights according to birthorder. In view of the limited number of observations, it is difficult to comment on the findings. However, it seems clear, that first borns are - on average - lighter than "later-borns". Average birthweight of male infants is 3108 g., females newborns weigh on average 3000 g. The overall mean birthweight - 3054 g. - is similar to the mean birthweight (3100g.) of newborns in rural Machakos (results of a longitudinal study on the outcome of pregnancy). The population in Machakos was considered marginally well-nourished

According to table II seasonal influences on mean birthweights could not be detected. Again, this lack of seasonal impact was found in Machakos.

The low-birthweight rate (< 2500 g.) was 8.2%. In Machakos it was about 9%. (In France in 1980: 8.0%). (Table III).

Data collected at the Centre indicated that the mean age at first delivery was 19.0 years (range 15-24 years). (Table IV). It should be borne in mind that many of the maternal ages were estimated.

For a (population-based) study of pregnancy, it is essential that the date of the Last Menstrual Period be known. Table V shows that 184 women (67.6% of the sample) remembered that particular date. This is very encouraging should a study of pregnancy be included in future activities.

BEST
AVAILABLEKarurumo Rural Health Training Center:

LOW BIRTHWEIGHT RATES, KARURUMO HEALTH CENTRE.

July 1979 - October 1982.

Period	<u>MALES</u>	<u>FEMALES</u>	<u>TOTAL</u>
July-Dec. 1979	70/5 = 7.1%	75/5 = 6.7%	145/10 = 6.9%
1980	153/13 = 8.5%	158/12 = 7.6%	311/25 = 8.0%
1981	64/8 = 12.5%	49/4 = 8.2%	113/12 = 10.6%
Jan.-Oct. 1982	138/8 = 5.8%	138/14 = 10.1%	276/22 = 8.0%
<u>Total</u>	<u>425/34 = 8.0%</u>	<u>420/35 = 8.3%</u>	<u>845/69 = 8.2%</u>

Low Birthweight: 2500g. or less.

- Year	No. of Deliveries	Still Births	
		No.	%
June-Dec. 1979	207	2	1.0
1980	456	5	1.1
1981	334	5	1.5
<u>Total</u>	<u>997</u>	<u>12</u>	<u>1.2</u>

BEST
AVAILABLE

KARUKUMO HEALTH CENTRE

JAN. - OCTOBER 1982

Total number of women interviewed:	272	
Difference between EDD and date of birth		
14 days	: 184	67.6%
No menstruation	: 21	7.7%
Dates not remember date of LMP	: 17	6.3%
Not sure of date of LMP	: 13	4.8%
Wrong dates	: 37	13.6%

As both clinics served more or less the same area, the results were pooled. Mean birthweights are presented in table VI; they are similar - though slightly higher than - to those in Kapurumo. There was no clear relation between mean birthweight and sublocation, at least as far as female newborns was concerned.

Seasonal influences can be excluded according to table VII (the number of observations is relatively small!!).

During the first 4 months of April 1982 9 caesarean sections were performed, i.e. 5.2% of total deliveries. (table VIII). At least some of them were due to contracted pelvis and foetal distress (see also table IX). Is this relatively high rate of C.S. related to maternal length and past nutritional stress?

Table IX shows some miscellaneous information, ~~including~~ inter alia that children delivered by C.S. are - on average - not heavier than other children delivered the normal way.

KYEME MISSION HOSPITAL

JAN - APRIL 1982

No. of deliveries	Normal	Breach	Vac.Extr.	C.S.
172	151	6	6	9
	87.8%	3.5%	3.5%	5.2%

Included are: 4 still births (2.3%)

7 Prematures (4.1%)

Not included: 5 pairs of twins.

Rate of LBW-babies 5.1%

BEST AVAILABLE

KATHANJURE HEALTH CENTER

Total # of Births*	Normal BW	Low BH	Still-births	Twins	Breech	
141	133	6	1	2	1	0
tot. 277	125	4.3%	0.8%	1.1%		

Figures for males given 1st

*covering periods: Jan-Apr. 1980; 1981; Jan-Oct 1982 and excluding twins and stillbirths.

Birth Interval

Interval	No.	Percent	Cumulative
12 mos.	7	6%	6%
15 mos.	2	2%	7%
20 mos.	3	3%	10%
24 mos.	41	36%	46%
27 mos.	5	4%	50%
28 mos.	1	1%	51%
30 mos.	16	14%	65%
36 mos.	20	18%	83%
39 mos.	3	3%	86%
48 mos.	3	3%	89%
60 mos.	2	2%	91%

Mean Interval

Kathanjure	24.7	Average mean = 25.5 Median = 27 months
Kathunguri	24.9	
Karurumo	26.7	

Incidence of Twinning - As reported by households in Preliminary Survey

	Pairs:	MM	FF	MF	TOTAL
Kathanjure		1	2	0	3
Kathunguri		1	1	4	6
Karurumo		1	1	0	2

Summary: 7 pairs of the same sex (not known if identical)
4 pairs of fraternal twins (MF)
7% of surveyed households had twins

VII ANTHROPOMETRY

Anthropometry was carried out as part of the preliminary survey of households. This included mothers and their pre-school children (0-59 months). The measurements were carried out at "stations" in social halls, a church, and at a health center. Length, or height, weight, and arm circumference were obtained. Also school-age children were measured during school hours.

Equipment:

Stature - Length boards with fixed head boards and sliding foot boards were used. With portable use, the bracing and moving parts have broken. The height rods with a fixed foot plate have proven too heavy for house to house use, but worked satisfactorily at a fixed station.

Weight - Salter scales for young children worked well for both stationary and house to house use. There is great difficulty with the adult scales. If we use "measurement stations" than reliable lever balances, although heavy, can be used. If we need a portable instrument, the "best" USA portable balance, the Continental spring balance, proved too heavy for portable use in Keyna as the households are scattered and ^{one} must walk long distances.

In general, there appears to be enough of a spread in measurements to indicate the necessary range in nutritional status for mothers and children under 5 years, and also for school-age children.

The NCHS-CDC programs were used to classify children 0-5 years for nutritional status by z scores and percent of median. Arm circumference was analyzed using a program using Ten State Nutrition Survey as well as NCHS reference levels.

Anthropometry Findings - Preliminary Survey

0-59 Months

There is a sufficient spread of nutritional status demonstrated by anthropometric findings (see table below). There is relatively little severe PEM, 2-4% increasing with age, particularly in the 24-59 months group. In the mild-moderate category, there are about 30-37% with moderate stunting; 20-30% of decreased weight-for-height and weight-for-age. About 60-70% of children examined were in the normal range. The numbers of individuals considered normal are much less (10-30%) if $\geq 100\%$ median values are used.

Females appear to have slightly better nutritional status than males, based on anthropometry. The reason for this is not apparent and will be investigated.

The amount of severe and mild-moderate PEM is similar to what was found in the 1979 CBS Nutrition Survey and of other adjacent districts to Embu.

5. ANTHROPOMETRY

	Age (yrs)		Standard Deviations (WHO)					
			<-3	-2.5	-2	-1.5	-1	-0.5
a) weight/age	0-1	M	0	0	0	0	0	27
		F	0	4	12	8	8	8
	1-2	M	0	17	17	11	11	28
		F	0	7	7	33	13	13
	2-3	M	24	0	12	12	32	12
		F	0	5	12	9	14	23
(% of each age group at each z score)	3-4	M	7	21	21	21	0	14
		F	14	5	5	9	14	23
	4-5	M	6	0	25	13	38	6
		F	6	11	6	0	33	17
	5-6	M						
		F						
	6-7	M						
		F						
	7-8	M						
		F						
	8-9	M						
		F						
	9-10	M						
		F						
	10-11	M						
		F						
	11-12	M						
		F						
b) height/age	0-1	M	0	0	0	18	36	9
		F	0	0	0	15	12	8

b) height/age (continued)		Standard Deviations (WHO)						
		-3	-2.5	-2	-1.5	-1	-0.5	
(% of each age group at each z score)	2-3	M	20	8	16	16	12	20
		F	6	0	29	24	12	6
	3-4	M	36	0	0	29	7	14
		F	23	0	5	5	23	0
	4-5	M	19	13	19	0	25	13
		F	6	6	28	17	11	17
	5-6	M						
		F						
	6-7	M						
		F						
	7-8	M						
		F						
8-9	M							
	F							
9-10	M							
	F							
10-11	M							
	F							
11-12	M							
	F							

c) weight/height		Standard Deviations (WHO)						
		-3	-2.5	-2	-1.5	-1	-0.5	
(% of each age group at each z score)	0-1	M	0	0	0	0	0	9
		F	0	0	4	8	12	0
	1-2	M	0	0	11	0	28	11
		F	0	0	0	13	13	33
	2-3	M	0	0	0	24	20	16
		F	0	0	0	0	18	24
	3-4	M	0	0	0	21	21	36
		F	0	0	0	9	23	28
	4-5	M	0	0	6	13	6	19
		F	0	6	0	11	11	6
	5-6	M						
		F						
6-7	M							
	F							
(n=24)	7-8	M	0	0	3	9	15	
		F	4	4	0	13	17	
(n=33)	8-9	M	0	12	0	15	4	
		F	3	0	0	18	9	
(n=36)	9-10	M	0	6	8	12	31	
		F	3	0	6	22	19	
(n=18)	10-11	M	0	8	0	25	17	
		F	0	0	1	2	6	
(n=25)	11-12	M	2	2	4	10	18	
		F	0	0	4	8	0	

Special School Survey (by %)

BEST AVAILABLE

EFFICIENCY LINE - 22 210

NUTRITION

CNSP - KENYA
PERCENT (%) PREVALENCE

Survey:
PRELIMINARY OF PEM CATE
GORIES
MILD TO

SEX	AGE	N	SEVERE						MODERATE									
			HA		WH		WA		AA*		HA		WH		WA		AA	
			%	≥	%	≥	%	≥	10 St	NC	%	≥	%	≥	%	≥	10 St	NC
MALES	0-5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6-23	23	0	0	0	9	0	0	0	0	26	35	22	22	26	26	17	4
	24-59	55	2	2	0	2	0	0	0	0	44	42	35	36	44	38	29	4
	TOTAL	84	2	1	0	4	0	0	0	0	36	37	29	30	36	32	24	
FEMALES	0-5	14	0	0	0	0	0	0	0	21	7	7	7	7	7	7	7	
	6-23	27	0	0	4	4	0	0	0	0	22	22	30	30	26	19	26	3
	24-59	57	4	2	2	2	0	0	0	0	33	31	18	25	19	19	12	3
	TOTAL	98	4	2	2	2	0	0	0	0	28	25	19	23	14	17	15	
ALL	0-5	20	0	0	0	0	0	0	0	15	5	5	5	5	5	5	5	
	6-23	50	0	0	2	6	0	0	0	0	24	28	26	26	26	22	22	3
	24-59	112	4	2	1	2	0	0	0	0	38	36	26	30	31	28	20	3
	TOTAL		4	2	1	3	0	0	0	0	32	31	24	26	27	24	19	

* AA - Arm circum. for age
10 St = Ten state Arm data
NC = NCHS Arm data

HA
WH
WA
AA

SEVERE
< 85% < -4
< 80% < -2
< 60% < -24
< 70%
% median = score

MILD-MOD
85-92.5% -2 to -4
80-90% -1 to -2
60-80% -2 to -4
70-85%
% median = score

NORMAL (1)
≥ 92.5% ≥ -2
≥ 90% ≥ -1
≥ 80% ≥ -2
≥ 85%
% median = score

BEST AVAILABLE

EFFICIENCY LINE 2631

Survey
Gorlos (Provisional)

PRELIMINARY
SURVEY CONT'D.

NORMAL (1)								NORMAL (2) **							
HA		WH		WA		AA		HA		WH		WA		AA	
%	Z	%	Z	%	Z	100%	NC	%	Z	%	Z	%	Z	100%	
100	100	100	100	100	100	100	-	17	100	67	83				
74	65	78	69	74	74	83	96	13	22	9	8				
52	56	65	62	58	62	71		7	20	9	7				
62	62	71	66	64	68	76		10	26	13	13				
79	93	93	93	93	93	93		29	86	64	64				
78	78	66	66	74	81	74	97	15	22	15	4				
63	67	80	73	81	81	88		24	25	16	28				
70	73	79	75	81	83	85		21	35	23	27				
85	95	95	95	95	95	95		25	90	65	70				
76	72	72	68	74	78	78	97	14	22	12	6				
58	62	73	68	69	72	80		15	25	12	18				
66	67	75	71	73	76	81		16	31	18	20				

HEIGHT FOR AGE
 WEIGHT FOR HEIGHT
 WEIGHT FOR AGE
 ARM CIRC. FOR AGE
 ES - 10 STATE SURVEY
 NH - NHHS

** (Include overnutrition)
 NORMAL (2)
 ≥ 100% ≥ 0
 ≥ 100% ≥ 0
 ≥ 100% ≥ 0
 ≥ 100% ≥ 0
 % median Z score

Waterlow Classification

HEIGHT For AGE AGES 0-59 months

1	2	3	4	5	6	7	8	9	10	11
WEIGHT For HEIGHT	Z SCORE	SEVERE <-4	MILD/MOD -2 TO -4	SCORE -1 TO -2	0 TO -1	NORMAL(2) ≥ 0	TOTAL %	n		
		SEVERE <-2	0	2	0.5	0.5	0.	3	5	
		MILD/MOD -1 TO -2	1	(11)	8	4	2	26	48	
		0 TO -1	0	11	13	9	7	40	73	
		NORMAL(2) ≥ 0	0	7	10	6	7	30	56	
		TOTAL %	1	31	32	20	16	100		
		N	2	56	58	37	29		182	
		<u>MILD/MOD</u>		HA + WT =	11%					(mid-moderate stunting and wasting)
				HA alone =	20%					
				WT alone =	15%					
					<u>46%</u>					

School Age Children

Comments on School children anthropometry

Study was done in three primary schools, one each in Karuruse, Kathunguri and Kathanjure Sublocations.

Children between ages 8-12 years were weighed and their heights taken. The age of the children were obtained from the schools admission register.

129 children were studied from Kathanjure, 78 from Karuruse and 75 from Kathunguri Sublocations.

Greater degree of wasting was found in Karuruse and Kathanjure compared to Kathunguri. More than 80% of children were well nourished in all areas.

Majority of the children had only mild wasting i.e. less than 1.5 S.D. from the mean. (See table below)

NUTRITION CESP - KENYA PROJECT

AMTHOROMETHI (SCHOOL AGE CHILDREN)

DEGREE OF WASTING, TABULATED BY AGE, AS PERCENTAGE OF CHILDREN IN AGE GROUP

AGE (YRS)	- 1 SD	-1.5 SD	- 2 SD	-2.5 SD	- 3 SD
8(58)	12	10.5	1.7	1.7	1.7
9(57)	7	19.3	0	5.3	1.7
10(86)	26.7	16.3	5.8	3.5	1.2
11(25)	16	20	8	0	0
12(56)	16.1	14.3	1.8	0	1.8
TOTAL (282)	16.7%	15.6%	3.2%	2.5%	1.4%

COMPARISON OF DEGREE OF WASTING, WT/HT, IN THE THREE SUBLOCATIONS AS A PERCENTAGE

(8 to 12 year olds)

SUBLOCATION	- 1 SD	-1.5 SD	- SD	2.5 SD	- 3 SD
KARUNJURE (129)	20.9	17.8	2.3	2.3	2.3
KAMUNICHURI (75)	10.7	5.3	1.5	4.0	0
KARURUMU (78)	15.4	21.5	6.4	2.6	1.3

Adults (Mother)

Ninety-five mothers were measured in the PS. They were classified as to nutritional status using wt/ht as percent of standard (see table below).

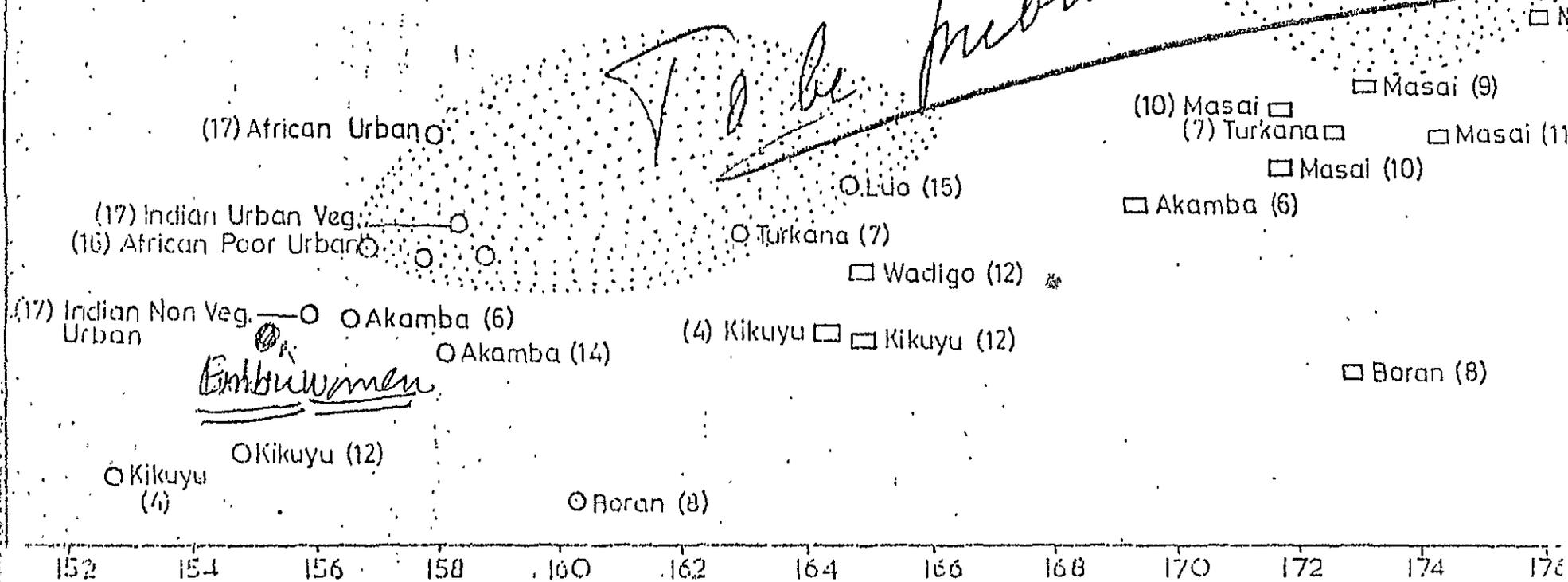
About 25% in the mild-moderate range of PEM with some evidence of severe fall PEM in the over 39 years group. Mean weight decreases over 39 years. Mean height is 155.4 cm.

Anthropometry - Weight for Height

Wt/Ht	20 yrs. n=8	20-29 yrs. n=30	30-39 yrs. n=41	over 39 yrs. n=16
<50% Std.*	-	-	-	-
60-69% Std.	-	-	-	-
70-79% Std.	-	-	-	7%
80-89% Std.	25%	27%	12%	25%
90-99% Std.	62%	60%	46%	44%
100-109% Std.	-	10%	27%	25%
≥110%	13%	3%	15%	-

*Society Actuaries modified by ICNND (1963), adopted from Jelliffie.

A.A. Jansen
To be published



Embu women

KENYAN WOMEN (REPRODUCTIVE AGE)

What follows is a brief report of food intake studies undertaken as of November 1, 1982 by the Nutrition CRSP - Kenya Project. The report is divided into sections:

- A. Training
- B. Field trials
- C. Preliminary Survey
- D. Market Surveys
- E. Calculations
- F. Results
- G. Food Weighment Pilot

The main objective of this report is to introduce the approach taken as of November 1, 1982 in Kenya, to highlight the problems encountered and the possibilities existing so as to facilitate the design of an appropriate CRSP food intake core. That will enable all projects to obtain adequate data on the independent variable.

Time constraints have prevented the combinations of calculations needed to convert food intake values in households into nutritional intake values in appropriate units.

It is not possible at this time to relate other information gathered from household members through the preliminary survey (PS) to their nutrient intake. Nevertheless, multidescriptive information is presented for familiarization so as to assist planning.

We have attempted to obtain information at the household level as well as at the level of mothers and pre-school children (the latter being defined as the those less than 5 years old). Mothers and pre-school children have also been the focus of attention of anthropometry. At the household level the information gathered has been based on one day recall using household measures. At the mother and child level the information obtained was also based on a one-day recall but in a semi-quantitative matter (as described below).

other aspects. Subsequently, compromises in methodology and approaches had to be made to facilitate the overall data collection process.

One of the main compromises agreed upon, affecting all aspects of the P.S., was to postpone the household registration to be able to collect P.S. information on about 150 HH from all of the sublocations for the November meetings.

The data collection for the P.S. was done by field workers working in pairs, one questioning the respondent and the other assisting. For the weighment pilot, field workers worked individually. Typically, six field workers were supervised by one person.

The supervisors were chosen as the most promising of the field workers after about 4 weeks of observations by the senior staff. There are 18 field workers and 3 supervisors that have "specialized" in food intake studies. Since the supervisors were "elevated from the ranks" they have no more experience than the field workers and also need a lot of supervision. It is not inconceivable that at some stage during the remainder of the P.S. some of the supervisors will be demoted and replaced by field workers with more promise. Senior staff depend greatly on the supervision and more effort is to be spent on making them aware of their roles and responsibilities.

A. Training

After about 1 week of general project introduction the field workers were divided into 2 groups. One group was to be trained in collecting census - type food intake information. This took a further 2 weeks and included a market survey (see below). The field workers were constantly evaluated by tests and practical sessions.

B. Field Trial

One week was spent in HHs in an adjoining sublocation (Kigumo) trying out all aspects of the PS including filling the food intake forms. This enabled us to correct mistakes and start the PS more effectively.

C. Food Intake SURVEY PS

Three types of information was collected from each HH in the following sequence:

1. One-day recall of food prepared and eaten by the HH.
2. One-day semi-quantitative recall of food eaten by the mother and her child(ren) less than 5 years old.
3. A seven-day recall of the food types consumed by the HH.

See Appendix C for all food intake tables.

1. One-day recall of food prepared and eaten by the HH. The respondent was generally the mother (in most cases the main food preparer). The object was to record what foods were prepared and consumed by members of the HH the previous day (from the 1st meal after waking to the last meal before sleeping). See household food preparation from TABLE 1 and instructions sheets (TABLES 2 AND 3). Note that the calculation to convert household measures to gross and net weights were done later and have not been shown here.

This instrument provides information as to what the household was eating on the day before the visit. In the CALCULATION section of this report it will be noted that a crude HH eating score has been devised to relate the nutrients eaten by the HH to the people actually doing the eating. This is to compare one with another when the selection of HH to be included in the main study is done.

Problems encountered with this instrument:

(a) size of instrument. This is being increased (to be the same as the census form).

b) measures the general state of poverty means that any container obtained by the HH is likely to be put to use in the market and/or in the kitchen.

Thus, there is a tremendous variety of containers of different shapes and sizes used as HH measures. Their capacity has to be measured not only in terms of liquids but also in terms of grains, flour, etc. The most common cooking pot is the sufuria. An aluminum sauce pan plus rim, but with no handle, which has the capacity ranging from 0.5 L to about 25 L. Estimating the volumes of food in these has been very difficult. Field workers have had to measure their diameters and the height of food in the sufuria. Since these are essentially cylinders it is possible to calculate volume from those values. These aspects are dealt with in more detail in the calculation section.

c) Leftovers: a major headache is the common habit of either preparing food on one or more days before it is eaten. If it is eaten on the same day as it is prepared, then it is often prepared much earlier on in the day and modifying the prepared food flavoring with onions, etc.) before eating it and so in effect converting it to a new dish. Field workers have been making more errors in accurately recording leftovers than in any other aspect of the instrument.

2. One day semi-quantitative recall of food eaten by the mother and her children. The object being to obtain estimates of the food intake of the mother and her child(ren) less than 5 years old (see TABLES 4, 5, & 6)

The field workers were provided with (initially) one 250 ml and one 500 ml graduated measuring jug. Later they were also given a 250 ml graduated measuring cylinder with many more graduations than the 250 ml jug.

The field workers were instructed to get the mother to fill the eating dish she or her child used with water (for drinks, watery stew etc.) flour or earth (for ugali) maize or beans (for Kitheri) etc. up to the level that was actually taking plate wastes into account). This would then be transferred to a measuring jug/cylinder and the volume estimated (tables are used to convert these volumes into ___ food and so to ingredients; (see CALCULATION section). Scales would have to be used to weigh any cooked food (if present) additional ingredients added to the eating dish and fruits etc. of equivalent size if present. The lack of scales have made this impossible so far.

Few problems were encountered with this instrument. If the respondent's recall was accurate, then the amount eaten was estimated accurately. There was a tendency, however, on the part of the field workers to "round off" volumes to the nearest 50 ml, especially at the beginning when they did not possess the measuring cylinder. The main problem has to do with small children serving themselves from the cooking pot such that only they know how much they ate. This happens quite a lot and makes it very difficult to get a decent recall estimate.

3. Seven-day recall of food types consumed by the HH. The respondent was asked whether or not her HH has consumed the items listed on the table (TABLE 7). The object being to obtain an idea of the types of food being eaten at this time of year. A food frequency approach was tried at the beginning i.e., type of food and number of times. The respondent had a great deal of trouble remembering readily what dishes and so what food, were eaten by the HH during the previous 7 days. Given the limited time (less than 90 minutes) that the field workers had to spend in each home, we felt that it was not worth sacrificing one of the other aspects of the food intake data collection to obtain reasonable frequency values.

D. MARKET SURVEYS

These were carried out in September once at Ishiara, a large market some 15 km north and east of our research site. The object was to collect information that would enable us to convert household measures into weighs. The approach was to weigh and measure as many replicates of as many food-stuffs as the market contained. So from TABLE 8 it can be seen that, for example, on average a 2kg kimbo tin heaped full with dry maize contains 2385g of the maize. A person selling vegetables is approached, the English potatoes (say) are arranged in order of size, they are all to be weighed and from this (with much repetition) the average weight of a medium sized English potato is calculated.

With sugarcane the average weight per length is calculated and used. In the same vein, we have carried out trials to estimate the average weight of a teaspoon (heaped) of sugar, for example, (see TABLE 9) and so on. The information that we have collected so far is by no means comprehensive. This was brought out when the raw data in the instruments were started to be converted into amounts of raw ingredients. We plan to do more market surveys and more trials to collect this missing information.

E. CALCULATIONS

To convert data collected by field workers into g of raw ingredients (edible portions) and so of nutrients, several tables have been put together for this purpose, (see Tables 8, 9, 10, 11, and 12). TABLE 8 comes from market surveys, tables 9, 10, and 12 from trials and table 11 from the literature (Tropical Africa).

To computerize this information would seem a daunting task. At the moment calculations are being done by hand by four (ex-) University students recruited for the purpose. In due course perhaps programmes can be written, the instruments pre-coded so that information can flow quickly, meanwhile.....it should be noted that the weakest link in this particular chain may well be the food composition tables!

We still await from CRSP guidelines for the selection of HH for the main study. What role food intake information will play is not clear, nor do we know whether the approach will be a HH or an individual (or both). Until further instruction, CRSP/Kenya is to relate all food intake data (drawn from the one-day HH food preparation form (TABLE 1) to a HH eating score; this is derived from the type and number of persons eating a meal. Based on literature figures for energy needs:

To obtain a HH eating Score

<u>Member</u>	<u>Recommended energy intake</u>				
adult	AM	is	multiplied	by 1	(2700)
adult AF	"	"	"	0.75	(2000)
young male	YM	"	"	" 1.1	(2900)
young female	YF	"	"	" 0.8	(2100)
school age	SC	"	"	" 0.9	(2400)
pre-school	PS	"	"	" 0.5	(1400)
I	"	"	"	0.3 (800)	

and the amounts added up.

The overall HH nutrient intake are then divided by the HH eating score. The data collected by the Kenya CHSP on HH intake only includes dishes prepared and eaten in the HH and does not include snacks which may contribute significant amounts of nutrients to the HH.

At the time of writing, the tables needed to calculate all the forms were not completed, hence, nutrient intake values are not available, neither at the HH level, nor at the individual level. It has, however, been possible to obtain a glimpse of the eating habits of our study population. This is presented in the next section.

F. RESULTS

Table 13 Distributions of persons eating various meals, by sublocation. This information was obtained from the one-day HH food preparation forms. It does not include dishes not prepared in the HHs or snacks. The absolute values depend on the population distributions within the HH visited. Adult males, adult females, young males and young females eat (at least) three meals per day in all 3 sublocations. This is also true for school children although in Kathanjure only about 2/3 of those having breakfast and lunch also had supper. For pre-school (and infants) breakfast tends to be eaten more than other meals. In part, this is because the younger the child the fewer the dishes it shares with other members of the HH.

TABLE 14: Approximately one dish per breakfast, lunch and dinner is served. Tea and uji are by far the most common breakfast dishes; kitheri the most common lunch and supper dish.

Based on a one-day recall on average one dish served per day is a leftover, the most common by far being kitheri. These results are fairly consistent across sublocations, although kitheri seems to be particularly popular in Karurumo.

bananas and paw paw may also be given to the infant. In its second year the child starts to feed herself; up to this time this has been done by the mother, grandmother, older sister etc. Feeding bottles are not very common so the child would initially be fed from a cup or bowl with a spoon. Tea, very sweet and usually containing milk would also be given to the child. Kitheri is gradually introduced and now the child eat like older members of the HH.

FIGURE 2: Origin of foodstuffs consumed by HHs (based on one-day recall) In the HH food preparation form (TABLE 1) the ingredients used to prepare the dishes are classified as having been either purchased, obtained from the shamba or obtained as gifts. This is expressed on Figure 2, by sublocation and by the sublocations and by the sublocations combined. Each category has been divided into those foodstuffs that are usually grown/prepared in the home and these same foodstuffs plus those that are not "home - processed" such as tea-leaves, coffee, fat, salt, sugar, etc. This latter category is termed purchased plus or shamba plus or gift plus to distinguish it from purchased, shamba, gift.

So far Kathanjure location, for all foodstuffs excluding those "processed" 41% were purchased, 59% originated from the shamba and 4% were obtained as gifts. When processed foods are included, 64% of the total were purchased, 33% were obtained from the shamba and 3% obtained as gifts. Note that in this tabulation, each food item is given the same score, irrespective of its amount and cost. On average, almost 70% of non-processed foods originate in the shamba with gifts accounting for somewhat less than 5%.

TABLE 15: Dishes consumed by mothers and pre-school children, by sublocation. Kitheri, tea, porridge, gitwero, ugali, and stew are the most commonly eaten dishes (in decreasing order) by mothers in all three sublocations. Mothers would seem to eat little animal foods (with the exception of milk in tea). For children porridge is the most common food followed by gitwero, kitheri, than ugali and stew, tea and cow's milk. The younger the child, the more gitwero and cow's milk is eaten at the expense of kitheri, beans not being favored as infant food by mothers. About 7% of pre-school children had cow's milk (not including what was present in tea) and (with the exception of breast milk is almost all the animal food eaten by these children. The information on breast-feeding is somewhat suspect since mothers do not generally consider breast-milk as a dish.

TABLE 16: Contains information on the usual composition and method of preparation of all the common dishes prepared and consumed.

TABLE 17: Goes further to include data on the occurrence (%) of ingredients in the common dishes, by sublocation. Kitheri is mostly maize and beans. Fat and onions are frequently present. Other legumes, vegetables, meat etc. are added according to availability and taste. Ugali is made from milled (extraction rate?) maize flour. When a combination of flours are used the mother has problems in many cases remembering the proportions. This makes recall of this dish difficult. Gitwero is a popular weaning food. The younger the child the more the vararas and potatoes and the less the beans, peas etc.

TABLE 18: Based on a single one-day recall mothers in Kathanjure and Kathuguri eat 3 meals per day. In Karurumo the average was 2 meals per day. Pre-school children had about 3 meals per day on average (including snacks). About 40% of mothers had snacks, here defined as food taken between meals.

60% to 70% of pre-school children had snacks. Since these children only have marginally more total meals per day than their mothers, it would seem that the children eat less frequently at meal times. Tea and uji were the most common snacks for mothers who on average at 1.7 snacks per day. For pre-school children, milk and uji were most popular followed by tea and gitwero. On average the amount of snacks eaten by these children per day decreased from 2.0 in Kathanjure to 1.6 in Karurumo.

FIGURE 1: Information was gathered on the basis of one 7-day recall on the types of foods consumed by HHS. As is shown on figure 1 a wide variety of foods are consumed with maize, kidney beans, green bananas, onions, milk, fat, sugar consumed by HHS by food groups and by sublocation is presented in TABLE 19. It should be remembered that different agricultural conditions exist in the study area resulting in differences in food and non-food crops grown between the sublocations at this point in time. Changes that do exist are likely to differ from season to season and it is conceivable that at certain times of the year there are marked differences in food habits between the higher and lower elevations of our study area.

Infant and Pre-School feeding habits.

Typically, the child is breast-fed for 1 to 2 years. Twenty-eight percent of the children surveyed so far were breast fed on the day the recall was carried out. Supplements start early generally with glucolin and Ribera - water for those that can afford it, sugar-water for the others.

Cerelac, Lactogen and/or cow's milk comes next. After about 3 months gitwero and/or porridge is given and if available occasional fruit such as sween

bananas and paw paw may also be given to the infant. In its second year the child starts to feed herself; up to this time this has been done by the mother, grandmother, older sister etc. Feeding bottles are not very common so the child would initially be fed from a cup or bowl with a spoon. Tea, very sweet and usually containing milk would also be given to the child. Kitheri is gradually introduced and now the child eat like older members of the HH.

FIGURE 2: Origin of foodstuffs consumed by HHs (based on one-day recall) In the HH food preparation form (TABLE 1) the ingredients used to prepare the dishes are classified as having been either purchased, obtained from the shamba or obtained as gifts. This is expressed on Figure 2, by sublocation and by the sublocations and by the sublocations combined. Each category has been divided into those foodstuffs that are usually grown/prepared in the home and these same foodstuffs plus those that are not "home - processed" such as tea-leaves, coffee, fat, salt, sugar, etc. This latter category is termed purchased plus or shamba plus or gift plus to distinguish it from purchased, shamba, gift.

So far Kathanjure location, for all foodstuffs excluding those "processed" 41% were purchased, 59% originated from the shamba and 4% were obtained as gifts. When processed foods are included, 64% of the total were purchased, 33% were obtained from the shamba and 3% obtained as gifts. Note that in this tabulation, each food item is given the same score, irrespective of its amount and cost. On average, almost 70% of non-processed foods originate in the shamba with gifts accounting for somewhat less than 5%.

G. FOOD WEIGHMENT PILOT

Food weighment was carried out in approximately 30 HH in a two week period in a sublocation adjacent to our study area. All food prepared by the HH and all foods eaten by the mother, a school-child and a pre-school child were weighed for a 12 hour period from 7 a.m. to 7 p.m.. Dishes prepared by the HH prior to the arrival of the field worker from the home during the 12-hour period by one or more of the individuals were described by recall so that if the mother left her pre-school child at home for lunch and went to eat elsewhere the field workers was to stay in the home and weigh the food eaten by the child and obtain information of what the mother ate whilst away, by recall.

As well as the regular recall forms, the field worker was provided with household food forms and instructions TABLE 20 and 21. One form is used for each dish. For weighment of food consumed by:

1. the mother, 2. a school child, 3. a pre-school child, 4. individual forms and instructions were provided (TABLES 22 and 23).

The field workers were provided with 3 scales; 0-500g platform scale, 0-4 (or 5) kg platform scale and 0-125 kg adult weighing scale. They were taught to use the smallest scale possible. The adult scale was used surprisingly often mostly to weigh Kitheri (the most common dish) which was prepared in large quantities (5-20 kg). They were also provided with a flashlight since invariably the last meal of the day was prepared and eaten in the dark.

The field workers were asked to keep simple diaries whilst at work and these have been transcribed and are appended. The homes were selected by the sub-chiefs of the location (Kigumo) and the field workers were introduced to the home the day before by the Sub-chief who was at that point able to explain the mother and/or HH head what was in store for them the following day. The outcome of this advance preparation was excellent cooperation

Comments of the weighment: this was as much a training exercise for the field workers as it was a pilot to develop methodology. Nonetheless, the outcome was encouraging. Once the field workers were quite clear as to what was expected of them the quality of the data collected became satisfactory.

In most HH, the kitchen consists of a separate building which is generally the least well maintained. Wall, thatch roof etc. Typically, the only openings are a very small window and a door. Cooking is done usually on an open wood-fire, the cooking pots being supported by 3 large stones arranged in a triangle. The consequence of this fire plus poor ventilation in the smoke and heat quickly became almost unbearable. It seems that everybody is affected by the smoke including the mothers doing the cooking. This combined with the dark environment (particularly at night) make reading scales and filling forms difficult. Flashlights are of necessity but need to be held which causes complications. One solution might be to have fluorescent power-packs. Some HH have paraffin, but this is scarce and not often used in the kitchen.

HH that cook on jikos with charcoal are much more pleasant to work in but these are in minority, a jiko being a mild steel container in which charcoal is burnt and on top of which the cooking pot is placed). Some HH have their cooking area in the mother's and/or in the main hut with partition and curtain separating the area from the rest of the house. These tend to be better lit and better ventilated.

The scales used were not satisfactory. The Hansen type 0-100g has the pointer far from the scale which results in reading errors if the eyes are not close and level with the pointer. The 0-5kg scales used (4 of them) were purchased in Kenya. These are Weighmaster and Prestige cooking scales; the former being better than the latter. Although light and not portable the

zeroing mechanisms was difficult to operate, a nuisance when one needs to zero for each weighing. It seems unlikely that the scales would survive for more than 2-3 months, the thrashing get in the fields. The cost of these in Kenya was about \$501. The adult scales (Healthometers) used to weigh heavy dishes (>5 kg) were heavy and not sufficiently accurate. Also, they possess a handle in the center of the scale which means that wood blocks have to be provided to support large dishes.

A major problem for the field workers was keeping up with the activities at meal times; cooking, serving, eating. There was a great need to instruct the mother and discipline the HH so that plates, cups, bowls, impediments, food, leftovers, waste, etc. could all be weighed. Whether or not changes in eating habits occurred as a result is not known. Also, since each dish has its own form and the intake of three individuals is being measured, five or six forms had to be manipulated during peak times. In compounds with more than one cooking place it was quite common for children to be eating part of their meal in one place and part of it in another.

Cooking takes place generally in sufuria (aluminium pots). The cooked food is then dished out onto plates, cups, bowls etc. and the individual eats from the plate with a spoon or fork. Fruit, sugarcane, roasted bananas and sweet potatoes are eaten by hand.

Cooking can start very early at sunrise (between 6 and 6:30 a.m.) and goes on intermittently until after sunset up to 8-9 p.m. In this pilot study each day for 1 1/2 weeks 4 field workers were collected from their homes between 5 and 6 a.m. and taken to the HH to be there by 7 a.m. They stayed until about 7:30 p.m. and were then taken home. This causes transport problems since the young female field workers may live too far from their place of work and in any case are reluctant to walk in the dark by themselves.

2) Eating patterns

Much of this has been addressed already. On the question of foods consumed away from home. Husbands (and sometimes wives) at work away from home and school children at school would be the worst culprits although some school children at school would be the worst culprits although some school children do not eat at school. The consumption of home-brewed alcoholic beverages may have decreased dramatically following the President's ban on home-brewing. Bottle beer is available, relatively expensive and would appear to be drunk by adult males in Bars.

The eating style in Kenya does involve a common cooking pot but from this individual plates/dishes, etc. are filled with the food eaten from the pot with a spoon.

Typically, mothers and children eat in and close by the cooking place. Foods will generally be taken to the husband's house.

No information has been gathered on the degree of stability of the commensal unit. Limited observations would suggest that it will be highly variable. Information on food intake by the HH is collected in the preliminary survey in the sense that dishes prepared by the HH and the number and type of people eating these dishes is being recorded. Given that the average HH size is 7 people, it would be difficult to collect individual data on all of these.

As has been described in detail above, we have as part of the PS been obtaining our individual food intake information by a semi-quantitative recall approach. We have also attempted a small pilot study on weighing whereby

It is impossible to predict whether or not HH would tolerate repeated intrusions of this type into their homes. It depends on

- a) the season, i.e. are they busy planting?
- b) the influence of the local authorities in convincing them to make the sacrifice.
- c) the benefits offered in return.
- d) the total inconvenience imposed upon them by all aspects of the CRSP.

The feeling is that the influence of the Chief and of his Sub-chief is considerable such that people can be "directed" to cooperate if the chief or sub-chief thinks it is worthwhile. At the time of writing it is our belief that we have a chief and sub-chief anxious to support the CRSP as best as they are able. This approach may be the most effective but is it the most ethical?

Other comments and notes on general food habits are addressed in the next section.

H. TAG report on food intake.

1) Intra-individual

Variability in food intake. This has yet to be approached by the Kenya project. No information is available from Kenya on this. This could be approached as a pilot study. It would be useful to know how necessary this information is. Will the determination of the number of multiple records that are to be kept be dependent on this information, for example. If so then guidance from CRSP as to the number of HH individuals to be studied and the number of replications would be helpful.

2) Eating patterns

Much of this has been addressed already. On the question of foods consumed away from home. Husbands (and sometimes wives) at work away from home and school children at school would be the worst culprits although some school children at school would be the worst culprits although some school children do not eat at school. The consumption of home-brewed alcoholic beverages may have decreased dramatically following the President's ban on home-brewing. Bottle beer is available, relatively expensive and would appear to be drunk by adult males in Bars.

The eating style in Kenya does involve a common cooking pot but from this individual plates/dishes, etc. are filled with the food eaten from the plate with a spoon.

Typically, mothers and children eat in and close by the cooking place. Foods will generally be taken to the husband's house.

No information has been gathered on the degree of stability of the commensal unit. Limited observations would suggest that it will be highly variable. Information on food intake by the HH is collected in the preliminary survey in the sense that dishes prepared by the HH and the number and type of people eating these dishes is being recorded. Given that the average HH size is 7 people, it would be difficult to collect individual data on all of these.

As has been described in detail above, we have as part of the PS been obtaining our individual food intake information by a semi-quantitative recall approach. We have also attempted a small pilot study on weighing whereby

foods prepared by the HH was weighed as were certain individual's portions. Other intake information is also being obtained by recall.

It should be noted that food-related activities occupies one or more members of the HH almost full-time. A field workers collecting data on food intake does not have much time to do other things, especially if weighing of ingredients and dishes has a large part to play.

Subject tolerance is very difficult to assess. Some of the reasons for this have been outlined above. Field trials to attempt to assess this would best provide accurate information since tolerance will be to a large extent depend on the balance between perceived benefits/inducements' to cooperate and inconveniences caused by the complete project.

All field workers collecting data on food intake are involved with the PS on a full-time basis. To carry out all the field trials suggested by the TAG report would involve the use of a "specialty team" of 5-10 field workers working full-time on this aspect. This will cause difficulties in supervision and logistics.

Food consumption data may well be one of the weakest links in the food intake study chain. If the TAG recommendations on this aspect are to be followed, resources have to be allocated.

The AOAC methodology on nutrients of foods could be carried out in Kenya given adequate facilities.

IX. ACTIVITY

DEFINITION CRSP - KENYA PROJECT
ACTIVITY PILOT STUDY *Reported by Dorothy J. Cottle*

**BEST
AVAILABLE**

GENERAL PLAN OF OPERATION

The Kenya Project has attempted several pilot studies and other short trials. One of the pilot studies was on activity. The Project has appointed a special activity enumerator team which currently consists of 2 male enumerators: both of Kigumo sublocation. Kigumo which borders Kathunguri has served as our test area; our first field test of enumerators took place in this sublocation (census & food intake interviews). The food intake weightment pilot study also took place in Kigumo (activity pilot was simultaneous with food pilot, but fewer days). The sub-chief for Kigumo has given the Project prompt and consistent assistance in all these various trials.

The households which have participated have been cooperative and welcoming.

The activity special team was given the assignment to each observe 3 different males: an adult male, a school-age boy (8-12 yrs); and a teen-age male. This special team does the activity observations as individual enumerators, although they have, thus far, been in the field on the same day, in the same area. The younger school-age subjects went to the same school so the 2 observers were together during school hours.

The general plan was coordinated with the food intake pilot. The activity team was introduced to their respective households the day prior to the observations. The sub-chief had selected the households and informed them of the study and usually went with the teams for the introductions.

At time of introduction, the suitability of the intended subject was determined (whether the individual planned to be in the local vicinity the following day, etc.) and introductions, explanations, and permissions were made or obtained. The following day the activity observers would be delivered to their hhs just prior to 7:00AM. Observations were scheduled for 7:00AM to 7:00 PM. The observers were equipped with a small school exercise book, preliminary activity forms, clipboard, large envelope for the papers, and pencils, erasers, rulers, sharpener. Enumerators provided their own watches. The food intake supervisor was in charge of the activity team to assure that their work went smoothly. The instructions to the enumerators were simple: record all activities (the forms had space for various information depending on the activity..load, terrain, etc.) and pay attention and carefully watch the respondent. Enumerators were not to interfere with the normal running of the hh and with the normal activities of their subjects. The team was to be honest about the problems, the information, the timing. Both found that a running brief account/listing of the activities as they occurred was an easier means of recording than using any of the forms provided. Enumerators did help their subjects on at least two occasions. It is difficult for an able adult to sit and not help; social expectations are to assist, even briefly or minimally. Other comments by the enumerators are included with their detailed summaries which follow.

(Note: These enumerators had general experience with recording activities; they had completed assignments to a-record their own activities for about a half-day and they had completed b-observation/recalls on at least one

NUTRITION CSEP - KENYA PROJECT

ACTIVITY SUMMARIES - Reported by Dorothy J. Cattle

BEST AVAILABLE

ACTIVITIES OF SCHOOL-AGE CHILDREN

School-age males: 19 individuals; age range of 8 to 17 yrs; mean age - 12 yrs;

Day of 'Observation': Thursday, Friday, or Saturday

Date of 'Observation': 7, 8, or 9/10/82

BEFORE SCHOOL/GOING TO SCHOOL ACTIVITIES

Personal care - dressing; washing; hair care;

Other Personal - drinking; talking; eating; carrying; warming water; fetching water; walking; sitting; riding bicycle;

Agriculture Prod. - none recorded

Household Errands/Food Prep. - collecting rubbish

Childcare - none recorded

Animal care- milking

Play/Sports - playing

AT SCHOOL ACTIVITIES (CLASSROOM AND- ER EA KS)

Classroom: talking; sitting; learning; reading; writing; studying; answering questions; charting; drawing; telling a story; classwork; handcraft;

Other School - parade and inspection; cleaning school compound; hoisting flag; sweeping; washing classroom; fetching water; cutting grass; collecting rubbish; watering plants; working in school garden; taking school milk (drinking); smearing classroom;

Outside/Break - warming outside; playing; studying; running; walking; standing; resting; games;

Personal - running to toilet

AFTER SCHOOL ACTIVITIES

Agriculture Prod. - digging; harrowing; carrying banana stems; picking cotton; transporting milk; making holes for planting maize; planting onions;

Household Errands/Food Prep. - walking to shop; fetching water;

Childcare - looking for lost brother;

Animal Care - grazing goats; grazing; milking; collecting animal feeds;

Play/Sports - playing football (soccer); playing; playing on way home;

visiting with friend; went for fun;

Personal - resting; sleeping; washing; eating; taking tea; walking; sitting;

BEST AVAILABLE

NUTRITION CRSP - KENYA PROJECT
ACTIVITY SUMMARIES *Reported by Dorothy J. Cattle*

ACTIVITIES OF SCHOOL-AGE CHILDREN

School-age females: 27 individuals; age range of 5.5 to 15 yrs;
mean age 11 yrs (no age given for 1 individual);

Day of 'Observation': Thursday, Friday, or Saturday

Date of 'Observation': 7, 8, or 9/10/82

BEFORE SCHOOL/GOING TO SCHOOL ACTIVITIES

Personal care - washing; dressing; hair care;

Other personal - drinking; running; walking; eating; carrying;

Agriculture Prod. - none reported

Household Errands/Food Prep. - sweeping; preparing breakfast;

Childcare- none reported

Animal care - none reported

Play/Sports - playing

AT SCHOOL ACTIVITIES (CLASSROOM AND BREAKS)

Classroom - reading; taking test; listening; answering questions; writing;
talking; collecting books; learning; studying; asking
questions; drawing; knitting; making skirt;

Other School - assembly (singing, standing, saying prayer); washing
classroom; working in school garden; digging; watering;
planting; sweeping; collecting rubbish; fetching water;

Outside/Break --games; walking; talking; playing; running; warming
outside; standing; resting; sitting; hiding (truancy);

Personal - none reported

AFTER SCHOOL ACTIVITIES

Agriculture Prod. - planting beans;

Household Errands/Food Prep. - fetching water; washing clothes; washing
utensils; cooking; collecting firewood; carrying
firewood;

Childcare - carrying child; looking after baby; looking after children;

Animal Care - none reported

Play/Sports - talking w/ friend; playing;

Personal - polishing shoes; washing; eating; sleeping; walking; running;
sitting; carrying books; talking; standing; undressing; bathing;
doing homework; knitting; (severe headache);

(continued with lunch break during school-day, next page)

NUTRITION CRSP - KENYA PROJECT

ACTIVITY SUMMARIES *Reported by Dorothy J. Cottle.*

ACTIVITIES OF SCHOOL - AGE CHILDREN

BEST AVAILABLE

LEUCE FILE

Males -

- playing
- eating
- running; running home for lunch (5 -25 min.) & back to school
- walking
- resting
- sitting
- studying
- riding a bicycle
- drinking
- feeding poultry

Females -

- playing
- changing clothes
- eating
- sitting
- running; running home for lunch & back to school
- walking
- standing
- studying
- sweeping house
- washing utensils
- talking with friends
- smearing the classroom
- cleaning tables

Discussions with enumerators pointed out that children between the ages of six and twelve are expected to do substantial work around the compound and in the fields. The last two months have been a busy time for agricultural tasks - ground preparation and planting. School-age children help in most aspects of this work and perhaps seasonally hard work is reflected in anthropometric measurements.

This information was collected by all the enumerators and was supposed to be done by observation. However, it appears to be at least partly recalled and estimates of time made; time is not always given. It is probably a fair representation of types of activities of school children. After School activities apparently are more important for hh production than at other times of the day. The division of labor between males and females is also apparent from such a listing.

Enumerators gathered similar information on adult males and females. General bar graphs (profiles?) were drawn up but not double-checked by sr. personnel. As a general pattern they are probably useful. Also of interest should be the categories of sleeping and resting, although not all records included a night's sleep, but the am't of time for the subjects which had data give a basic picture.

(see pages 9-12)

ACTIVITY PILOT STUDY *Reported by Dorothy J. Cottle*

The following are detailed summaries of their activity observations.

SCHOOL-AGE MALES p.1

Respondent A: age 10 yrs. Friday, 22/10/82

BEFORE SCHOOL/GOING TO SCHOOL ACTIVITIES

<u>Time</u>	<u>Activity Description</u>
7:03am	Started for school. Ran for the first 120 steps and walked the rest of the distance, about 1.5km, along a gentle slope downwards.

AT SCHOOL ACTIVITIES (CLASSROOM AND BREAKS)

7:26.5	Arrived at school and rested for 8.5 minutes.
7:35	Started cleaning school compound.
7:55	Started for parade. Walked for .5 minute a distance of 21 steps. Stayed on parade for 17 minutes.
8:12.5	Walked to classroom for .5 minute, a distance of about 21m (estimated by foot paces). Stayed in classroom for 7 minutes.
8:20	Listened to teacher's brief explanation before taking exam.
8:23	Awaited exam outside, leaning against classroom wall.
8:36	Played around chasing a friend for 2 minutes, a distance of about 240m.
8:38	Rested for 2 minutes.
8:40	Took instructions before taking exam.
8:42	Started exam.
9:15	Exam finished and walked to playground, a distance of about 240m in 5 minutes. Add'l walk, 30m in 1 minute.
9:21	Rested, sitting.
9:54	Ran for 1 minute to the classroom, a distance of about 240m.
9:55	Stayed in classroom.
10:17	Walked out of class, estimated distance of about 25m.
10:17.5	Rested, standing.
10:45	Walked to classroom, a distance of about 25m.
10:45.5	Stayed in classroom without a teacher.
11:14	Rested, standing at the doorway to the classroom.
11:23.5	Walked for 2 minutes, a distance of about 100m.
11:25.5	Rested.
11:32	Ran to classroom, a distance of about 100m.
11:33	Stayed in classroom with a teacher.
12:00n	Rested outside the classroom wall.
12:42pm	Walked for .5 minute to parade ground, distance of about 21 steps, and paraded.
12:48.5	Ran for 2 minutes, a distance of about 170m.
12:50.5	Resting under a tree's shade waiting for his friend.
1:32 <u>AFTER</u>	Started for home, walking, a distance of about 1.5km.
1:58 <u>SCHOOL</u>	Enumerator was stopped to explain the project to an old man just near the gate leading to the child's home.
2:00	Changed school uniform.
2:03	Rested sitting on a chair.
2:04	Took lunch /eating/.
2:15	Walked from house to house /in compound/ estimated distance 20m in 30 seconds.

(continued)

(cont)

School-age males: Respondent A (cont) p.2

AFTER SCHOOL ACTIVITIES

- 2:18 Walked from kitchen to chickens' pen, est. distance 15m.
2:18.5 Walked to main house, distance of about 18m.
2:19.5 Stayed in the house.
2:21.5 Walked from house to house, a distance of about 30m.
2:22.5 Walked around, estimated distance 15m.
2:23 Started repairing chickens' pen using a hammer, nails, panga, and rafters.
2:54 Walked around for about 100m.
2:58 Stayed in a granary.
3:03 Walked to water tap, turned it on & off, distance walked c.12m.
3:04 Stayed in kitchen.
3:10 Walked to water tap, turned it on, off, est. distance 20m.
3:12 Stayed in kitchen.
3:15.5 Walked downslope to cut sugar canes, est. distance 100m, weight carried 1.5kg.
3:18.5 Cut sugar canes.
3:20 Walked uphill for about 40m. carrying about 4.5kg load.
3:24 Rested.
3:33.5 Walked downhill again, distance 40m, load carried 1.5kg.
3:34 Walked uphill, distance 40m, est. load carried .5kg.
3:35.5 Rested.
3:50 Started grazing (looking after a cow) in an unpaddocked grazing area.
4:35 Stopped grazing and walked down a steep valley a distance of about 40m and back again the same distance.
4:37 Came to the grazing area and continued grazing. While grazing he played around climbing up & down a ladder and also made several walks to bring the animal closer.
6:16 Took the animal home a distance of about 60 steps (foot paces).
6:17 Walked to toilet, est. distance 15m to & from where he started.
6:19 Rested, but still looking after the cow (tied now).
6:32.5 Locked chickens and cow in their enclosures.
6:40 Walked to the main house, est. distance 10m in 25 minutes and started taking supper.
7:03 Enumerator left the place but respondent had not finished taking /eating/ supper.

Enumerator made several comments including the observation that his respondent remained dull at school, never wanting to play around with his friends; participated bit more in his daily activities at home than at school. Enumerator thought being under observation affected the boy.

Respondent B: age 9 yrs. Friday, 22/10/82

BEFORE SCHOOL/GOING TO SCHOOL ACTIVITIES

- 7.04am Started for school, walking.
7.28 AT SCHOOL Arrived at school, 1.5km; played with his friends.
7.35 Cleaned his part /school chore/
7.55 Walked 24 steps to parade for flag hoist.
8.12.5 Ran near the classroom, stood outside for 5.5 minutes waiting for the teacher.
8.20 Went into class to get ready for exams.
8.25 Awaiting exams outside the classroom, standing.
8.30 Played around, ran for 30m.
8.35 Started exams.
9.12 Finished exams.

AT SCHOOL ACTIVITIES (cont)

9.25 Went back to class.
9.27 Got out of class and played with classmates.
9.43 Rested.
10.18 Played, wrestling.
10.32 Rested, talking with friends.
10.54 Walked to classroom.
11.25 Got out of class and played.
11.50 Rested.
12.30pm Walked to class, 24 steps.
12.39 Got out of class, rested sitting on ground.
12.42 Parade for lunch check, walked to parade, 80 steps from classroom.
12.44 Left for home, running, slowed down after 10m.
1.05 Went into his mother's house in school compound.
1.32 Went for home, walking.

AFTER SCHOOL ACTIVITIES

1.50 Arrived home.
2.01 Put on home clothes.
2.05 Took lunch, sitting down on a chair in main house.
2.25 Escorted goats to the grazing area, 168 steps.
2.34 Back home.
2.53 Went to work on the farm, digging.
3.09 Walked to his neighbor's (classmate) home, 240m.
3.14 Arrived at that home.
3.15 Dropped to the valley, 120 steps.
3.25 Got sugar canes from neighbor's farm.
4.26 Back to the valley.
4.56 Went back home.
5.06 Worked in their shamba (farm), digging.
5.17 Removed chigger from his grandfather's toe, 50 steps.
5.25 Back to shamba.
5.45 Came out of shamba and fed cows from a shed.
5.50 Sat on a stool in the kitchen for a short rest.
5.58 Took the implements he used to dig out of the shamba & stored them, 30 steps.
6.03 Planted flowers around the house.
6.08 Untied goats from the field, 168 steps.
6.13 Brought the goats home & locked them in their feeding place.
6.19 Rolling bicycle rim in the home compound.
6.20 Returned some utensils to the kitchen.
6.22 Repairing the rim.
6.24 Rolling the rim.
6.30 Transported milk to a friend's home, 2 bottles, 2km, enumerator helped him by carrying one bottle.
6.45 Arrived at friend's home.
6.47 Started for home, walking slowly with the empty bottles.
7:04 Arrived back home.

Enumerator notes that everything went well although some changes occurred in the boy's activities due to be observed; close relative said this to enumerator.

NUTRITION CRSP - KENYA PROJECT
ACTIVITY PILOT STUDY *Reported by Dorothy T. Collier*

BEST
AVAILABLE

ADULT MALES p. 1

Respondent C: age 42 yrs. Tuesday, 19/10/82

Daily Activity Summary: as summarized on form provided (not recorded on this form)

Personal Care (washing, dressing, etc.) (method used & time spent) 70

- bending, washing form a basin 09.5 min.
- toilet 03.0 min.
- removing mud from boots, bending 01.0 min.
- preparation to start an activity 06.0 min.
- 19.5 min. Subtotal 3

Cookery ii

- Firewood gathering: wt. 2kg. est., flat terrain, 5m distance est. 02.0 min.
- 02.0 min. Subtotal 0.3

Animal Husbandry

- collecting animal feeds: wt. 25kg, hilly, 217m 43.0 min.
- 43.0 min. Subtotal 4
- Feeding animals: no. of animals-6 37 min.
- cleaning animal enclosures: for 6 animals 13.0 min.
- 93.0 min. Subtotal for AH 13

Traveling

- on foot: to place of work & to the nearby market; walking slowly; hilly, rugged terrain, 2km292m; 2kgload 117.0 min.
- 117.0 min. Subtotal 16

Resting and Sleeping

- resting: time of day-broad daylight 169.5 min.
- sleeping: (respondent still a sleep when enumerator arrives) 10.0 min.
- 179.5 min. Subtotal 25

Other Activities

- pruning coffee (36 stems) 230.0 min.
- eating & drinking 70.0 min.
- sharpening panga 05.0 min.
- 305.0 min. Subtotal 43

TOTAL: 716 minutes

Enumerator Comments: "My respondent was quite free with me and I noted that my presence hardly had any influence on his daily activities. It was a wet day, thus in most cases he had to terminate an activity in order to get rain cover (probably accts for much of travel on foot to place of work-djc). I wasn't bothered much by people around for they seemed aware of whatever was going on." Enumerator notes problems of trying to categorize or describe activities, especially separating activities such as taking snuff, positioning a ladder, etc. - activities of very short duration. E enumerator comments "I was prone to being unable to stay conscious the whole day long. In fact I lost sight of my respondent for 4 minutes in the whole period." (This was the special team's first day in the field for the pilot.)

NUTRITION CRSP - KENYA PROJECT
ACTIVITY PILOT STUDY *Reported by Dorothy T. Coker*

BEST
AVAILABLE

ADULT MALES p. 2

Respondent D: age 53 yrs. Tuesday, 19/10/82

Daily Activity Summary: (as summarized on form provided-not recorded on this form)

Personal Care		<u>0.5</u>
-no description (on form)	04.0 min.	
	04.0 min. Subtotal	0.5

Cookery ii		
-firewood gathering: wt. 25kg, slope, 115 steps	18.0 min.	
	18.0 min. Subtotal	2

Animal Husbandry		
-collecting animal feeds	197.0 min.	
-feeding animals(8 animals)	35.0 min.	
	232.0 min. Subtotal	31

Construction Work		
-Digging trench to prevent water from getting into house	05.0 min.	
	05.0 min. Subtotal	0.5

Agriculture ii		
-transportation of farm produce: wheel barrow: 60kg, 115 steps	98.0 min.	
-storage of farm produce: put into sack & stored sack in kitchen	61.0 min.	
	159.0 min. Subtotal	21

Travelling		
-on foot: to tell neighbor about the animal feed on his farm ; walking fast, flat, 130 steps, no load	06.0 min.	
	06.0 min. Subtotal	0.5

Recreation		
-listening to radio	01.0 min.	
	01.0 min. Subtotal	0.1

Resting and Sleeping		
-resting: two times before lunch & lunchtime	173.0 min.	
-sleeping: none	173.0 min. Subtotal	23

Other		
-took meals		
-tied animals		
	150 min. Subtotal	20
	748 min. TOTAL	

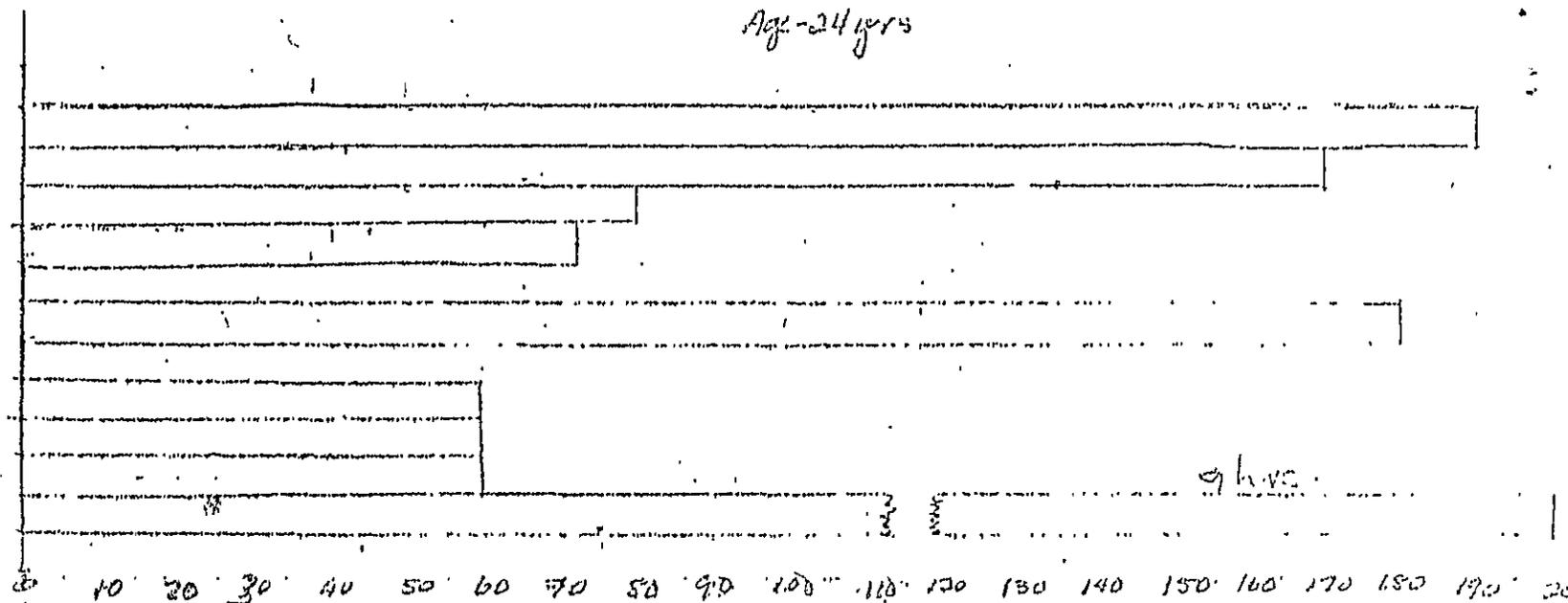
Wife/illness

FEMALE

RESPONDENT NO. 2

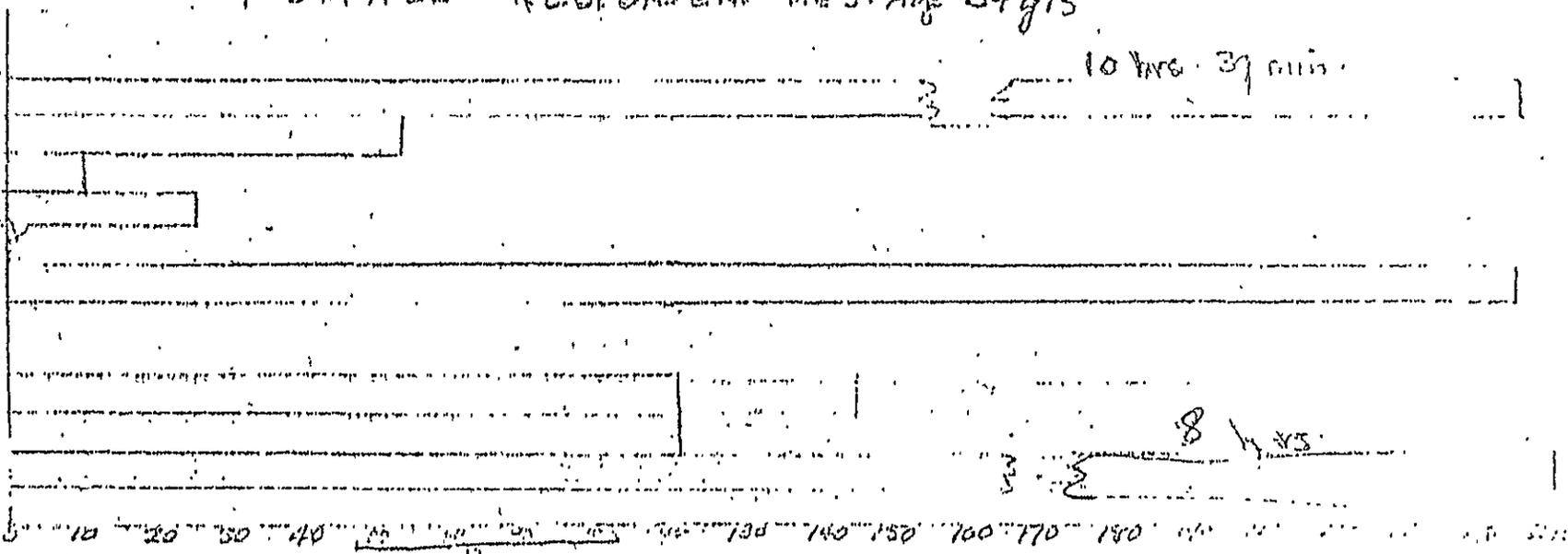
Age - 24 yrs

- General house work
- Cookery
- Cookery
- Animal Husbandry
- Construction
- Agriculture
- Agriculture
- Travelling
- Recreation
- Resting
- Sleeping
- Others



TIME TAKEN IN MINUTES
ACTIVITY CATEGORY
FEMALE RESPONDENT NO. 3. Age - 34 yrs

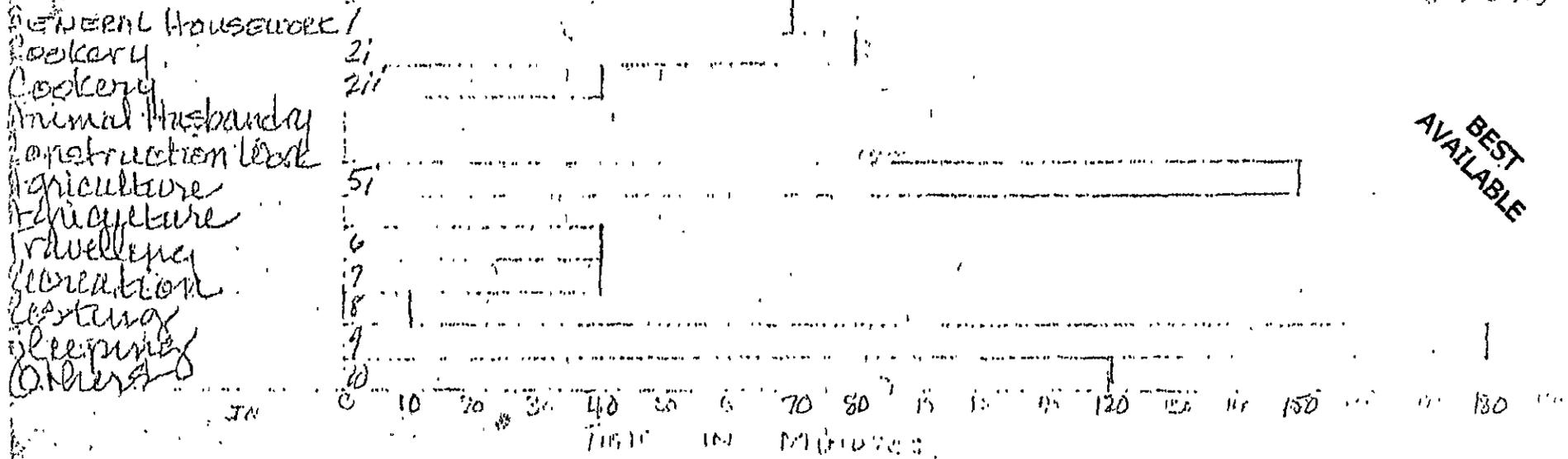
- General Housework
- Cookery
- Cookery
- Animal Husbandry
- Construction
- Agriculture
- Agriculture
- Travelling
- Recreation
- Resting
- Sleeping
- Others



TIME TAKEN IN MINUTES

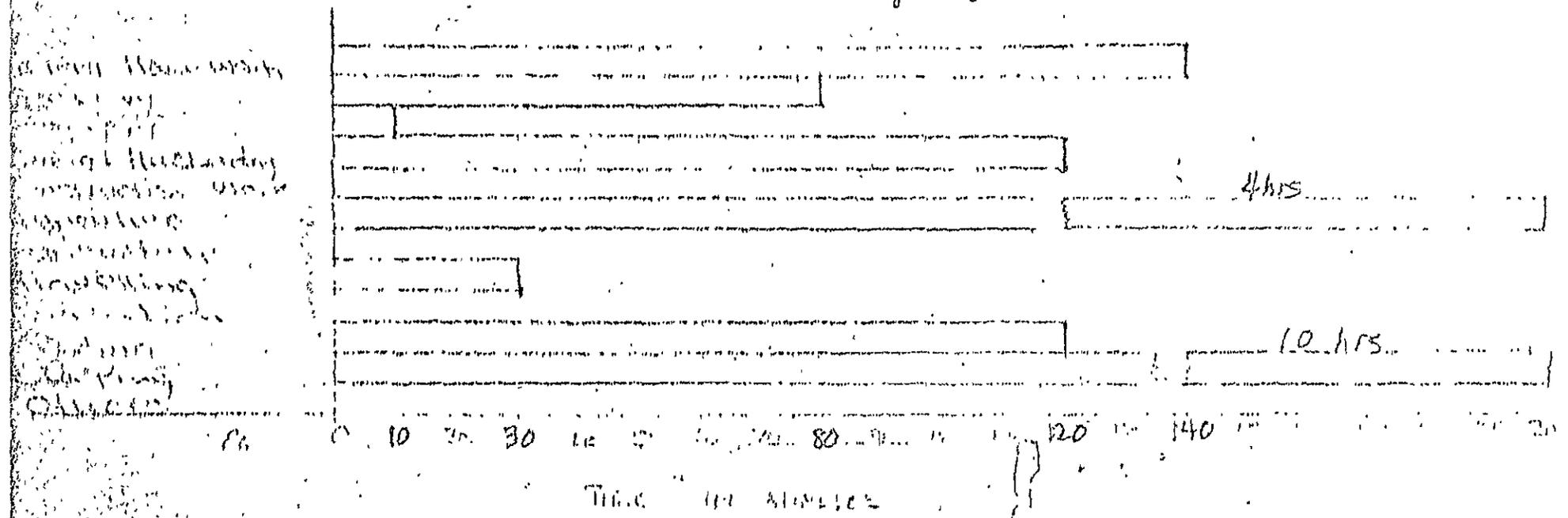
Age - 43 yrs.

11/20/47
Steve Jones



BEST AVAILABLE

Age - 33 yrs.



4 hrs

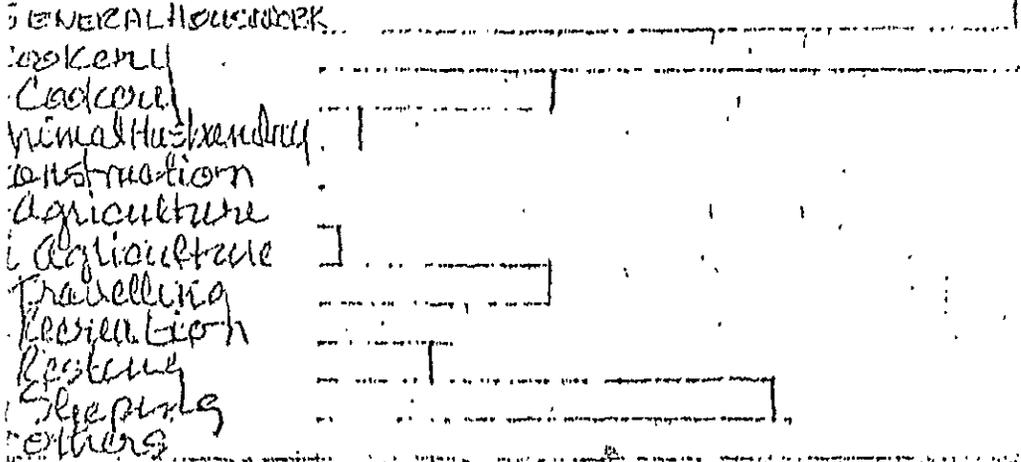
10 hrs

PEOPLE RESPONDENT No 8.

Age - 50 yrs.

WELLY MUTITH
MERCY WITWISH MAFITE
JOUCE NJIRU

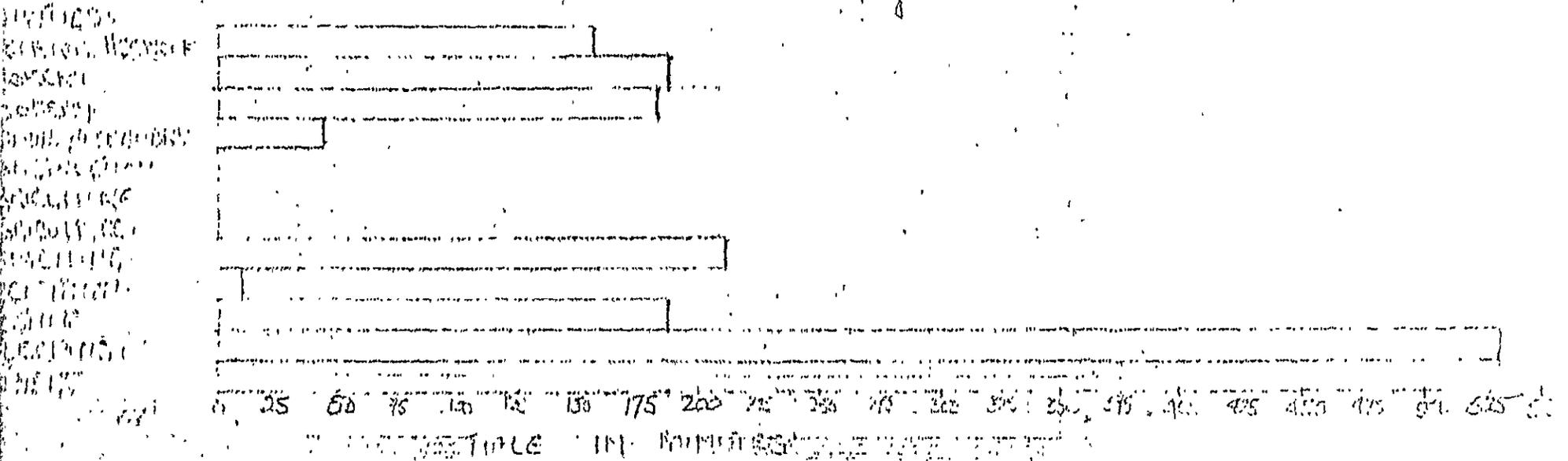
ACTIVITIES.



TIME IN MINUTES.

BEST AVAILABLE

PEOPLE RESPONDENT No 9 Age - ND.



TIME IN MINUTES.

APPENDIX A

BACKGROUND INFORMATION

BACKGROUND INFORMATION

EXISTING INFORMATION ABOUT THE STUDY AREA FROM COMMUNITY DIAGNOSIS PAPERS
(Conducted in various parishes by Medical & Health Students in 1980.)

Karurumo, 7/8/79 - 272 households = 1725 persons

Areas: Kathanjuri**, Kasafari**

Migration Rates: Low

Divorce Rate: Low

Karurumo: Approx. 49% of Pop. is 15 yrs. or younger

Kenya: Approx. 47% of Pop. is 15 yrs. or younger

Gen. Fertility Rate $\left(\frac{\# \text{ of live births } \times 1000}{\# \text{ of females 15-45 yrs.}} \right)$ 2.82 (Kenya 220)

Marriage: Age 15 and above are mostly married

Household size: 4-7; 16% had 10 or more persons; 43% had 6 or more

Land: Almost everyone has land

Of 35 pregnant women, 69% had attended an ante-natal clinic

Breastfeeding: % Breastfeeding

0-18 mos. 81

19-36 mos. 15

Average age to stop breastfeeding - 15 mos.

Average age to start other foods - 4 mos.

Water source:

Kasafari - 64% obtain from stream or river
25% from tap

Kathanjuri - 72% from tap (treated)
25% from stream or river

Latrines:

Kasafari - 73% had none

Kathanjuri - 84% had latrines

**Kathanjuri area: higher, more fertile, more densely populated, some coffee cultivation, highlands.

*Kasafari area: semi-arid, low rainfall. This sublocation will not be included because of very sparsely distributed homesteads.

Housing:

Kathanjuri - housing better, with cement floors, tin or tile roofs
Almost 1/3 of households had no windows (ventilation not as important as security); average 3-4 persons/room.

The selected study areas for the preliminary survey include Kathanjuri then 2 more sub-locations which are intermediate between the semiarid area of Kasafari and the more fertile highland coffee growing area of Kathanjuri - (Karurumo, Kathanguri, and Kathanjuri).

Felt Needs:

Family Problems: 1. Lack of money, 2. Lack of food (15% of adults response) 3. Lack of water, clothing, transport and good housing 4. Health (15% of adults response)

Family Solutions: 1. Casual labor 2. Employment 3. Hospital treatment 4. Business 5. Nothing 6. Other - farming, tanks for rainwater, harambee (self-help), husband's salary

Community Problems: 1. Lack of roads (21% of adults response, 27% of teens response) 2. Lack of water, 3. Illiteracy 4. Unmarried mothers 5. Other - lack of money, worries, food, clothing 6. None (17% of adults response, 18% of teens)

Community Solutions: 1. Improved farming 2. Harambee 3. Nothing (55%) 4. Other - individual and church members

Soc. - Econ.:

Major income source	Subsist				
	Salary	Cash Crop	Business	Farm	Other
Kathanjuri	13%	47%	4%	25%	10%
Kasafari	12%	26%	5%	45%	13%

Major expenditure	School Fees	Food	Clothing	Other
	Kathanjuri	31%	24%	35%
Kasafari	21%	25%	32%	21%

Household Descriptions:

Definition: Polygamous households will form a compound. Definition will focus on "those who eat together-share cooked food."

Structure: Polygamous households expected between 5% and 15% of population; female-headed households are likely to be widows with children (households in a compound). Average number of children under 15 years expected: 3 or 4/HH.

Physical Description:

Housing: Walls - mud, sun-dried brick, wood, tin, stone
Roof - thatch, tin, tile
Windows - none to approx. 3; usually no glass or screen

- Rooms - usually 1 or 2
- Kitchen Facility - may be separate; wood fire common
- Utilities - usually none to house
- Toilet Facility - simple pit latrine or bush
- Refuse disposal - usually in garden; refuse pit or burned
- Compound - may consist of several households or a household with several sleeping quarters clustered together.

Agriculture

Fields usually surrounding compound or household; more distant land may be owned or worked.
 Livestock - cattle, goats, some chickens, donkeys, oxen: grazed and watered during day; penned in compound at night; some animals may be brought into house at night.

V. Health Facilities and Personnel

Facilities: District Hospital - Embu Town
 Ambulance; mobile clinic.
 Mission Hospital - Kyeni Hospital
 (R. Catholic) private
 Health Centers - Runyenjes Town
 - Karurumo rural health center
 Training Center - Karurumo
 Mobile clinics and ambulance service
 hampered by lack of money and transport

Personnel: Health and medical personnel at provincial and district levels headquartered in Embu town: for example: PMO (Provincial Medical Officer) has an interest in nutrition; Prov. Nursing Officer has interests in child morbidity and effectiveness of MCH (Maternal & Child Health) clinics; MOH (Medical Officer of Health) & Clinical Officers at District Hospital have concerns with treatment of malnourished children admitted to Hospital. Both Health Centers have a nutrition worker, a clinical officer, various public health officials (Nursing and Sanitation/Hygiene) and Nurses.

Programs: Facilities have outreach programs, when money and transport permit; nutrition workers attempt to make home visits; Karurumo has classrooms, student hostel, dining room to run teaching/training program for rural health workers.

VI. Economy

Land demarcation: apparently been accomplished throughout study area; population movement is from higher, better potential, more densely settled areas to lower, more marginal, drier, sparsely populated areas of Embu district.

Major Cash crop (from high elevation to lower areas) are: tea, coffee, cotton, tobacco.

Other crops include: maize, millet, sorghum, beans (several types), peas (cow and pigeon); also grown are bananas, English potatoes, cabbage, kale, tomato, onion, carrot, mango, pawpaw, yam, sweet potato, cassava, taro, sugar cane, pumpkin.

Marketing: local markets are usually held one day a week at particular occasions; foodstuffs and household goods sold: livestock at larger markets; market usually situated in area surrounded by small rural shops and often on a road. Co-operatives - some major crops, such as coffee, are regulated and sold through a co-operative association.

VII. Education:

Rural Primary Schools are scattered throughout study area; Secondary Schools are fewer. Families must pay school fees and buy school uniforms for their children. Some Primary schools have school gardens. School building may be community-built; school supplies and equipment are scarce. Children walk to school.

VIII. Religion:

Various protestant denominations and Roman Catholic Missionaries have built rural churches in study area; these churches may be the most substantial, permanent buildings in the area. One social organization established by the church is a local mothers' union.

APPENDIX B

PRELIMINARY SURVEY - CENSUS - INITIAL
FIELD REPORT

BEST
AVAILABLE

EMBU DISTRICT CRSP - KENYA PROJECT

*Reported by Dorothy J. Little*PRELIMINARY SURVEY: CENSUS - INITIAL SUMMARIES OF FIELD STAFF
CALCULATIONS AND TABULATIONS

POPULATION: (All figures given in this summary were prepared by Field Supervisor Eliphas Ireri and his enumerators teams (Fides Rwamba, Beatrice Njoki, Mary Muthoni Paul, Jane Wambui, Margaret Kina, & Margaret Njege)). The total population surveyed is 987, with the breakdown by sublocation as: Kathanjure - 321; Kathunguri - 330; and Karurumo - 336. The population is a very young one (see population pyramids). Well over 60% of the population in each sublocation is age 20 or younger. Karurumo has the highest percentage (69.6%) and Kathanjure the lowest (64.8%). Both Kathunguri and Karurumo have more 5-yr-olds and younger than Kathanjure: 76, 100, and 57 respectively.

The population figures from the 1979 census by sex and sublocation

are as follows:

	Male	Female	Total	# of Households
EMBU DISTRICT	127,867	135,306	263,173	50,241
RUNYENJES DIVISION	71,969	76,162	148,131	25,291
KYEMI LOCATION	14,896	16,049	30,945	5,075
Sublocations:				
KATHANJURE	2,334	2,499	4,833	799
KATHUNGURI	1,772	1,964	3,736	681
KARURUMO	1,610	1,631	3,241	579
Subloc. Totals	5,716	6,094	11,810	2059

The area of each sublocation is 8, 16, and 17 sq. kms. respectively.

Population densities are 569, 220, and 132.

HOUSEHOLDS: (Tabulations re households were prepared by the group cited above.) The household definition used in the survey stressed the sharing of cooking/eating. The living/sleeping aspect was used to clarify current members (to distinguish "family" members who are now part of other hhs) and also turned out to be useful in determining the recent history of the compound or household (return of an adult female or the previous death of the head, for example). The separation of one hh from another seemed not to pose a major problem for enumerators; hh membership required more careful questioning. Compounds sometimes contained more than

one household; several were apparently remnants of a polygamous union where the common male head was deceased. This non-random survey revealed a variety of compound situations as well as a variety of hh types.

HOUSEHOLD COMPOSITION: The Kenya Project has tabulated household composition two ways. First, a preliminary classification of male-headed and female-headed hhs uses 9 types for each (see tables).

Type 1 for male-heads is the nuclear family of which there were 46 (partial) total for the 3 sublocations, out of approx. 88 male-headed hhs tabulated.

(There are 107 male-headed hhs.)

The second most numerous type was Type 4 which was the nuclear family plus grandchild(ren). This was also the second most common type for female-headed hhs. A parent or grandparent was more often included in male-headed hhs than female ones. Unrelated persons (maids, laborers, etc.) were not part of female-headed hhs. Widows in their own hhs were more common than men living alone, which is not surprising.

Second, the Kenya Project has looked at the numbers of hh members of 2 age groupings in relation to hh size (not separated by sex of hh head). If members aged 20 and under are considered, hhs may have 50 - 80% of their members in this age category. One hh of sixteen members (the largest in the survey) has twelve members age 20 or less; of these, 5 were under 5's. Although not statistically tested, it looks like Kathanjure households of larger size (8 members or more) have only one or two under 5's and 34% have no children in that age group. Karurumo, with the most under 5's, has 31 households of 4 members or larger that have 2 or 3 under 5's. This is probably related to the apparent younger age of household heads in Karurumo in comparison with Kathanjure. Karurumo is a more recently settled area as population pressure and land demarcation have opened up that sublocation to establishing 'homesteads.' Fewer households in Karurumo are female-headed, also probably an artifact of younger, more recently established households. A lower polygamy rate might be expected here on the same basis. In Kathanjure, of 47 hhs fifteen were female-headed (31.9%); in Kathururi, of 46 hhs eleven were female-headed (23.9%); in Karurumo the figures are 50 hhs, 10 female-headed (20%). This is about one-fourth of the hhs in the area surveyed. Polygamous households were found only in Kathanjure (5 hhs, 10.6%). The Project originally predicted a 5 - 15%

(cont)

rate of polygamy and still expects to survey such hhs in all 3 sublocations.

Household size ranges from 1 to 16, with an average approximately 7 members. This is one of the figures CRSP/ME considered important to design.

HOUSEHOLD LENGTH OF RESIDENCE: The length of hh residence in the sublocation was one means of determining population stability. The Kenya Project has calculated the range and mean by sublocation as well as cross-tabulated length of residence with age of hh head. The means are: Kathanjure - 12.1 yrs; Kathunguri - 13.8 yrs; and Karurumo - 7.6 yrs. Ranges in the same order of sublocations are: .25 - 50 yrs; .5 - 51 yrs.; and .42 - 22 yrs.

TIME SPENT OUTSIDE SUBLOCATION: The preliminary survey included a question on how much time each member of a hh spent outside their sublocation in the past year. The Kenya project will consider these figures as another means of determining population stability. Since the study sublocations are fairly small areas, the high percentage (80%) of male hh heads who did not spend any time outside their respective sublocations apparently indicates stable residence and non-migration among these heads. However, looking at the population pyramids may give the impression that adult males seem to be represented in fewer numbers than expected. This could mean that the area as a whole is losing productive males to (probably) non-rural areas. With regard to CRSP/ME design concerns, it would seem that lead males are available, but not necessarily the adult male population as a whole. (Figures and tables for these data were prepared by Field Supervisor Lucy R. Nyaga and Data/Office Supervisor Alfred Njue and enumerator teams: Mary Kathiga, Damaris Wangeri, Roseline Kavango, and Grave Kavindi and Richard Nzibe.)

HH COUNTED IN 1979 CENSUS: This was another marker for hh establishment and stability. The figures also emphasize the logistical difficulties of reaching all households in such a rural region. In Kathanjure, 8.5% of hhs surveyed were not counted in the 1979 census; in Kathunguri, 11% were not counted; but in Karurumo, the figure is 26% (a combination of recent migrants, younger, new hhs, and remoteness).

NUTRITION CRSP - KENYA PROJECT

(cont)

BEST
AVAILABLE

RELIGION: The surveyed population belongs to either various Protestant denominations or to Roman Catholic churches (see list). Very few responses for Muslim or Traditional religious preferences were recorded.

TRIBE: Most of the surveyed individuals are Waembu (members of the Embu tribe). This is also reflected in the tribal affiliations of married couples. In Kathanjure, of 32 male household heads, 25 are married to Embu women, with seven married to non-Embu females (Kikuyu, Mbere, Kamba, and Meru). In Kathunguri, only 3 male household heads are married to non-Embu women (2 to Kikuyu and 1 to Mbere) (Mbere is a tribe which is most numerous around the borders of the lower part of Kyeni Location). In Karurumo, 37 male household heads are married to Embu women with 5 married to non-Embu (again Kikuyu and Mbere women).

LANGUAGES SPOKEN: The predominant language is Kiembu, followed by Kiswahili, English, and Kikuyu. Kathunguri has the highest percentage of Kiswahili and English speakers (as second or third languages) among male heads of households. This also holds true for the population aged 20 and over. Residents of both Kathanjure and Kathunguri speak 2 to 3 languages; for Karurumo, about 2 languages is the average.

MARITAL STATUS: Marital status is reported here for two sublocations. In Kathanjure, for males aged 15 & over, 25 males in the 15-19 age group were single (no other status for this age group); in the 20-29 group 23 males were single and 5 were married. The same information for Kathunguri is 30 males in the 15-24 group were single and 3 were married; in the 25-34 group 1 was single and 11 married. Out of 143 men in the two sublocations aged 15 and older, there was only one widower and the only categories of marital status reported were single and married.

For females in the two sublocations (aged 12 and older), the same information follows; in Kathanjure, in the 12-19 group, 34 are single, 1 is married; in the 20-29 group, the figures are 7 & 6 respectively. There are 13 widows and 2 divorced women in the 95 women surveyed in Kathanjure. In Kathunguri, 40 women aged 12-22 were single and 4 married; those in the 25-32 group were 6 single & 7 married; there were 11 widows and 2 divorced women out of 92 females surveyed. (see tables)

LAST SCHOOL ATTENDED: Three tables appended present this information. Of interest is whether females obtain less schooling than males in all age groups and determining the pattern of no school attendance. In Kathanjure, a total of 39 persons never went to school (out of 125 surveyed) (age 20 and older), in Kathunguri, 22 (out of 116) and in Karurumo, 34 (out of 108) (31%, 19%, 31%). School fees must be raised by hhs for each child they send to school; obtaining sufficient money when the payments are due is a continuing problem. Not all hhs are successful each time. 30% need to send

AGES: Age determination presented the most problems for the census enumerators. Most persons in the survey had ID cards (national card) which

Ages: (cont) gave an age, usually incorrect since no record check or systematic questioning was carried out when the cards were/are issued to individuals. Often the respondent would inform the enumerator that the card was incorrect and then explain what the correct age is. Enumerators used events calendars to help establish ages. They also looked at clinic records/health cards/road to health charts which the hh might have; family records (kept in a notebook perhaps) and birth registration were the other records used. In the final selection of hhs and respondents, further work will have to be done on ages for all age groups. Enumerators will have to learn to use more effectively the seasonal round in order to pinpoint month of birth for the under 5's.

In Kathanjure, 52% of the ages of under 5's were confirmed by some record; 44% in Kathunguri; and 42% in Karurumo.

ANTHROPOMETRY: There are two sets of anthropometric data. One is the census information which was collected only on mothers and their under 5's. The other is a set of measurements of school-age children which was done because of the CRSP/ME interest in this age group.

The general plan of the census was: Mondays - Group A enumerators were assigned small areas in which to cover their number of hhs, usually 4 hhs per each 2-person team. The goal was about 45 households in each sublocation. On Tuesday, Group B enumerators did the food intake interviewing which took longer than the census interviews. Hence, the census group was paced in relation to what Group B could finish in approx. a day. On Wednesday, the mothers and their under 5's in the surveyed hhs would come to a central measuring station where the anthropometry was done. Anthropometric equipment has presented any number of problems for the Kenya Project. Scales for weighing adults were unreliable and too heavy to be easily portable should the need arise. Height measurements also presented problems; the original plan was to use an easily carried system. When that was not approved, then two height rods with footboard were locally made. These are bulky to transport even in a van. The length boards locally made have fared better, though the bracing, sliding hinges have broken their screws (under measurement station conditions which are somewhat easier than hh conditions). (Measurement stations have been held in a social hall, in a church, and in a health center.)

* In general there seems to be enough spread in measurements as plotted on graphs by hand to indicate the needed range in nutritional status for mothers and under 5's. However, no standard lines were plotted on the same graphs in order to make a more informed judgment. For the school-age children a listing of males and females in the various age groups (8-12 yrs) are presented with SDs noted as obtained from the pages originally provided by Arizona and included in the tome on the Preliminary Survey put out by CRSP/ME under George Beaton. A small check means that the individual was better than -1.0 SD; a +-3.0 SD means the individual was worse than a -3 SD; nt means the table didn't go that far in ht. A visual inspection of the SD notation seems to indicate that something has happened to the 10 yr-olds in Kathanjure; this is an age-group which does manual labor in the fields, esp. these last two months but so have children in other sublocations and other age groups. It could be the clustering is simply an artifact of perhaps incorrect ages which have put these individuals all together. Ages of these school children were mostly obtained from the school register as the measurements were done in schools. They are probably a reasonable approximation but not otherwise confirmed.

* Anthropometry subsequently looked at by Mame & Jansen; see separate report(s).

APPENDIX C

FOOD INTAKE

DIETARY SURVEY 1982 CONFIDENTIAL ONE-DAY HOUSEHOLD FOOD PREPARATION FORM

NO 48 HOUSEHOLD NO. 3049 RESPONDENT'S NAME VERONICA MOYA ESTIMATOR'S NAME SUSAN MCGUIR INTERVIEW STAGE FINISH

DISH	INGREDIENTS	FOOD DESCRIPTION	P.S. G	MEASURE	GROSS WEIGHT	NET WEIGHT	METHOD OF COOKING	PERSONS EATING	Amount
AND CONSUMED PARTIALLY OR TOTALLY ON DAY IN QUESTION									
TEA	TEA LEAVES WATER MILK SUGAR	GROUND PEANUT COW'S MILK	S S P	2 LEVEL TBS 1 Full bowl (150ml) 1 Full cup (200ml) 2 LEVEL TBS			- boil water - add sugar - mixure boils - she stirred & allowed - hot milk - lastly sugar added	1 AF 1 SC	Lettle 4 CL RUBIN LASTING (BY 1st)
(FRIED)	AS PREPARED FOR THE CHARITIES (SEE BELOW) PLUS FAT ONIONS SALT	AS BELOW KIMBO TUBERS FINE SALT	A P P S	PELONS (3 OF WHITE MASHED) 1 Heaped TBS 1 small size 1 small TBS 2 glasses (each 200ml)			AS BELOW 1/3 fried by cutting onion in a surface - cut fat and cook till onions turn brown - then salt, sample added	1 AF 1 SC	None
GITHIRO	BANANAS BEANS FAT ONIONS SALT WATER	Green dry Kimbo tubers fine salt	S S P P S	1/2 bowl into banana 3/4 big bowl (150ml) 1 heaped lbs 1 small size 1/2 lbs level 5 big bowls			- cooked beans 1st - added bananas, water and mashed fried onions in fat add water & gibbons - cook & mix	1 AF 1 SC	1/2 R 1st (Lunch)
FROM PREVIOUS DAY BUT CONSUMED PARTIALLY OR TOTALLY ON DAY IN QUESTION									
(GITHIRO)	MILK BEANS WATER	DRI DRI	S S S	3/4 big bowl 1 full same bowl 4 full same bowl			- boil maize 1st - then ready beans - more water added - water decanted then dried. (1/3 was fried) this day	1 SC 1 AF	The fr yther 1st givent. 1/3 of was dry Lunch dry 1/3 was suppl.

BEST AVAILABLE

FOOD INTAKE STUDIES

ONE-DAY HOUSEHOLD FOOD PREPARATION FORM

BEST
AVAILABLE

TABE 2

OBJECTIVE

To record what foods were prepared and consumed by members of the household the previous day, starting with the first meal of the day and continuing to the end of the day in sequence.

TIME OF DAY: Record approximate time dish was prepared.

DISH: Record name of dish.

INGREDIENTS: List all ingredients including water, salt, fat, etc.

FOOD DESCRIPTION: List type of food in whether green or dry, if potatoes, whether English or sweet, onions whether or not tuber. List also trade names for items such as fat.

P.S.G.: List whether ingredients were purchased, from the shamba or obtained as gifts.

MEASURE: List amount used utilizing appropriate household measure (see added list Table 3)

GROSSWEIGHT (RAW): Conversion of measures into weights to be done from tables.

NET WEIGHT (RAW): Subtraction of refuse weight from grossweight. Refuse weight obtained from tables. (note: you must be sure that you have collected and recorded all the information needed to enable us to complete the gross weight and net weight columns correctly).

METHOD OF COOKING: Record briefly how dish was prepared including whether ingredients were baked, boiled, fried, roasted, steamed etc.

PERSONS EATING: Record number and type of persons eating the particular dish.

AM = adult male (18 yrs and over) AF = adult female (18 yrs. & over)

YM = young male (13-18 yrs) YF = young female (13-18), SC = school child (5-13)

PS = pre-school child (1-5), I = infant (- 1 yr).

AMOUNT OF DISH LEFTOVER: Record using appropriate measure how much of the dish was left over at the end of the meal.

NOTE:

The top 2/3 of the form below where it says prepared and consumed partially or totally in day in question is for all dishes that were prepared and consumed (totally or in part) on the day that is being re-called. If a dish was prepared on a day (any day) prior to the day that is being re-called but is consumed partially or totally on the day that is being re-called then that dish is described fully in the lower section of the form. Remember to record how much of that dish was leftover. When a leftover dish (kitheri, say) is modified by frying, say) it becomes a new dish (fried kitheri) and is to be described in full

ESTIMATING AMOUNTS OF VARIOUS FOODSBEST
AVAILABLE

7. <u>FOOD</u>	<u>MEASURES</u>
1. CEREALS AND PRODUCTS Grains, flours, legumes, nuts	Tins, mugs, cups calabashes, small sufurias, trays, spoons, weight, handfuls.
2. STARCH ROOTS & TUBERS	Size, number, weight, monetary value.
3. VEGETABLES AND FRUITS	Funches, weights, size, number, monetary value, handfuls, basketfuls.
4. MEATS	Size, weight, number of pieces, cost.
5. CHICKEN	Whether hen or cock, which pieces, size.
6. EGGS	Number, size.
7. <u>SALT</u> SUGARS	Cups, spoons, number Cups, spoons, number
SYRUPS	Cups, spoons, number
<u>SWEETS</u>	Trade name, number.
8. <u>FATS</u>	Spoons, number & size
OILS	Cups, spoons, number & size
<u>BUTTER/MARGARINE</u>	Spoons etc.
9. <u>BEVERAGES</u>	Bottles, cups, glasses, jugs, packets, (milk); tradename (beer, soda) number.
10. <u>OTHERS</u>	
FISH	Type, size, number of pieces
<u>TERMITES</u>	Handfuls, cups
<u>CHARCOAL</u>	Size, number.

FOOD INTAKE STUDIES

ONE-DAY HOUSEHOLD FOOD PREPARATION FORM

TABLE 2

OBJECTIVE

BEST
AVAILABLE

To record what foods were prepared and consumed by members of the household the previous day, starting with the first meal of the day and continuing to the end of the day in sequence.

TIME OF DAY: Record approximate time dish was prepared.

DISH: Record name of dish.

INGREDIENTS: List all ingredients including water, salt, fat, etc.

FOOD DESCRIPTION: List type of food in whether green or dry, if potatoes, whether English or sweet, onions whether or not tuber. List also trade names for items such as fat.

P.S.G.: List whether ingredients were purchased, from the shamba or obtained as gifts.

MEASURE: List amount used utilizing appropriate household measure (see added list Table 3)

GROSSWEIGHT (RAW): Conversion of measures into weights to be done from tables.

NET WEIGHT (RAW): Subtraction of refuse weight from grossweight. Refuse weight obtained from tables. (note: you must be sure that you have collected and recorded all the information needed to enable us to complete the gross weight and net weight columns correctly).

METHOD OF COOKING: Record briefly how dish was prepared including whether ingredients were baked, boiled, fried, roasted, steamed etc.

PERSONS EATING: Record number and type of persons eating the particular dish

AM = adult male (18 yrs and over) AF = adult female (18 yrs & over)

YM = young male (13-18 yrs) YF = young female (13-18), SC = school child (5-13)

PS = pre-school child (1-5), I = infant (- 1 yr).

AMOUNT OF DISH LEFTOVER: Record using appropriate measure how much of the dish was left over at the end of the meal.

NOTE:

The top 2/3 of the form below where it says prepared and consumed partially or totally in day in question is for all dishes that were prepared and consumed (totally or in part) on the day that is being re-called. If a dish was prepared on a day (any day) prior to the day that is being re-called but is consumed partially or totally on the day that is being re-called then that dish is described fully in the lower section of the form. Remember to record how much of that dish was leftover. When a leftover dish (kitheri, say) is modified by frying, say) it becomes a new dish (fried kitheri) and is to be described in full

COMMUNITY HEALTH FACULTY DE MEDICINE, P.O. BOX 3072, NAIROBI / P.O. BOX 1002, NAIROBI
 PRELIMINARY SURVEY, 1982. CONFIDENTIAL | 24 HOUR INDIVIDUAL FOOD CONSUMPTION BY RECALL MOTHER FOR INTERVIEW

HSY NO. 12 HOUSEHOLD NO. 3049 RESPONDENT'S NAME VERONICA ADIA ENUMERATOR'S NAME SUSAN MURRAY

DATE 12 10 82 3049

TIME	DISH	COMMENTS (INGREDIENT)	HOUSEHOLD MEASURE	VOLUME ML.		WEIGHT OF		COOKED FOOD	RAW FOOD
				WATER	FOOD	COOKED	RAW		
2 1/2 3 am	TEA	As prepared for the hh	1 medium cup 3/4 full	250					
wake	TOBACCO	Brown chokoing smell	~ 6 times						
1 30	GITHERI	As prepared for hh	1 full sized plate		600				
4 15 pm	TEA	As prepared for the hh	1 full glass	200					
pm	GITHERO	As prepared for the hh	1/2 small size plate		400				
in	TEA	As for hh	1 medium cup	250					

DATE: 05.03.82 YR. HOUSEHOLD NO.: 2034 RESPONDANT'S NAME: Dorothy Mubura CHILD'S NAME: KARIMI NEWTON
 ENUMERATOR'S NAME: PEANA NYAKI INTERVIEW START: FINISH:

DATE	DISH	COMMENTS (INGREDIENTS)	HOUSEHOLD MEASURE	VOLUME ML		WEIGHT		HOW FED				WHO FED MT, CB, CS, G U, HG, HB	COOKED FOOD	RAW FOOD	PREPARED		
				WATER	FOOD	COOKED	RAW	BLIND	SMALL	MED	LARGE						
05/03	PORRIDGE	WATER S 3 MEDIUM CUP MAIZE FLOUR S 1 MEDIUM CUP SUGAR, WHITE P 3 TBSS (LEVEL)	consumed 1 GLASS	250								-					c-itself
05/03	PORRIDGE	As ABOVE	consumed 1 SMALL CUP	200								-					c-itself
05/03	GITNERO	Bananas, green S 6 small Potatoes, English S 15 Fat, tinned P 1 tsp (level) Salt, JAW'S P 1/2 tsp (level) Water S 2 medium cups	consumed 1 medium cup	200								-					c-itself
05/03	PORRIDGE	As ABOVE	1/2 medium cup	150								-					c-itself
05/03	GITNERO	As above	1/2 medium cup	150								-					c-itself

FOOD INTAKE STUDIES

ONE - DAY INDIVIDUAL FOOD CONSUMPTION: MOTHER & CHILD FORMS

TABLE 6

OBJECTIVE

To obtain estimates of the food intake of the mother and her children less than 5 years old. Start with the first meal of the day and proceed to the last meal remembering any snacks eaten in between meals.

A. MOTHER'S FORM

TIME: Record the time of day when the particular food was eaten.

DISH: The name of the dish that was eaten. Indicate if this dish was recorded on the one-day household food preparation form.

COMMENT (INGREDIENTS): For stew record consistency (watery, medium or dry) For Ugali/Mataha record whether it was served in pieces or as a lump. For meals eaten at hotels/canteens etc. record the name of the dish, the price of the dish and the place where it was eaten. Items purchased from hotels/canteens but eaten at home should have their names and prices also recorded in this column. For bread record the thickness of the slice (thin, medium, wide). If the dish was not listed on the one-day food preparation form, ie the dish was prepared only for the mother list the ingredients food description, household measure and whether P, S, or G in this column.

HOUSEHOLD MEASURE: Record the amount of food eaten was reported I.e $\frac{1}{2}$ plate of githeri, 3 tablespoons of meat, 2 glasses of tea, 1 cup of water, 2 slices of bread etc. If meat (other than chicken) is present in stew, record the number and size (small, medium, large) of the pieces eaten. If chicken has been eaten, the size of the chicken and the parts eaten should be stated. The amount of additional fat/sugar/salt added to the individual's plate should also be noted. If roots, tubers, or fruits are eaten the number and size should be recorded.

VOLUME ml: Indicate whether water or food was used for measuring.

Water - Use the volume of water to estimate the amount of drinks, watery and medium stew and uji that was consumed.

Food - Use flour for ugali, maize or beans for githeri, dry stew and rice.

Note - Remember to account for food remaining in eating vessel.

WEIGHT (g): Whenever a scale is used to weigh food, the amount should be recorded on this column.

Cooked - If there is extra food it should be weighed and recorded here.

Raw - Whenever possible weigh fruits if similar ones to those eaten are available in the home. Weigh additional sugar/salt/fat (butter, margarine, lard) if this is added to the eating vessel.

B. CHILD'S FORM

(for children less than 5 years old)

This should be recorded exactly as the mother's form, with the following additions: -

HOW FED: Check the column if the child is breast fed, bottlefed, hand fed or fed by any other means.

WHO FED: Indicate who fed the child that particular dish: M=Mother, F=Father
OB=Older brother, OS=Older sister, C=Child(specify if itself) GM=Grandmother
GF=Grandfather, HG=Housegirl, HB=Houseboy.

DATE _____

ENUMERATOR'S NAME _____

PAGE 1

RESPONDENT'S NAME _____

TABLE 7

FOOD ITEM

FOOD TYPES CONSUMED BY HOUSEHOLD (7-DAY RECALL), YES/NO

Maize (Mbembe)
Maize flour (Mutu wa Mbembe)
Sorghum (Muvia)
Millet, Bulrush (Mwere)
Millet, Finger (Mugimbi)
Rice (Mucere)
Wheat flour (Mutu wa Ngano)
Bean, Kidney (Mboco, Ndumu)
Bean, Lima (Noe)
Bean, Mung (Ndengu, Ngina)
Pea (Minji)
Pea, Cow (Nthoroko)
Pea, Pigeon (Mjugu)
Potato, English (Waru)
Potato, Sweet (Ngwaci)
Cassava (Mwanga)
Yam (Gikwa)
Green banana (Ndigu Mbithi)
Taro/Arrow root (Nduma)
Leaf, Bean (Nyeni cia Mboco)
Leaf, Potato (Nyeni cia Waru)
Leaf, cassava (Nyeni cia Mwanga)
Leaf, Cowpea (Mathoroko)
Cabbage (Mboga)
Kale (Cukuma)
Tomato (Nyanya)
Tree tomato (Maturda na nthakana)

Pumpkin (Irenga)

Onion (Gitunguru)

Carrot (Karati)

Mango (Igembe)

Sweet Barana (Ndiya ndume)

Paw Paw (Evavai)

Pineapple (Iraraci)

Avocado (Idondovia)

Guava (Mbera)

Orange (Icungwa)

Lemon (Itimu)

Passion fruit (Matunda ma Kithaka)

English passion fruit (Matunda ma kitungu)

Roseberry (Ndare)

Gooseberries (Macuca)

Cashewnuts (Ngoroca)

Queennut (Nenta)

Macadamia nut (Ngandamia)

Ground nut (Njuar karanga)

Milk (Iria)

Meat (Nyama)

Eggs (Matumbi)

Ghee (Thamuri)

~~Butter (Mugata)~~

Fat (Mugata makuruga)

Sugar (Cukari)

Honey (Uuki)

Sugarcane (Igwa)

Bread (Mugata)

Salt (Cumbi)

Masadi (Igiti)

TABLE 8SUMMARY

AVERAGE WEIGHTS / MEASURES

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
MAIZE (DRY)	2 kg KIMBO TIN HEAPED	2385
	" " " LEVEL	2200
	1 kg KIMBO TIN HEAPED	1200
	" " " LEVEL	1080
	1 kg BLUEBAND TIN	850
	500g GLUCOLIN TIN	675
	1 WANJIKI CUP	300
SORGHUM	2 kg KIMBO TIN HEAPED	2275
	" " " LEVEL	2100
	210 COWBOY TIN	2100
	1 kg KIMBO TIN	875
	500g KIMBO TIN	450
	500g GLUCOLIN TIN HEAPED	775
	500g GLUCOLIN TIN LEVEL	725
MILLET, BULRUSH	2 kg COWBOY TIN HEAPED	2750
	" " " LEVEL	2175
	1 kg KIMBO HEAPED	
	" " LEVEL	950
	1 kg BLUEBAND	875
	500g BLUEBAND	525
MILLET, FINGER	2 kg COWBOY TIN HEAPED	2275
	" " " LEVEL	2100
	2 kg KIMBO TIN	2000
	1 kg KIMBO TIN HEAPED	1000
	" " " LEVEL	950

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
MILLET, FINGER	1 kg BLUEBAND TIN 500g GLUCOLIN TIN HEAPED " " " LEVEL 500g BLUEBAND TIN ½ LITRE SHELL OIL TIN 500g GLUCOLIN TIN SMALLEST BLUEBAND TIN SMALL SIZE CUP HEAPED " " " LEVEL	875 800 750 500 600 875 250 125 100
RICE	2 kg KIMBO TIN HEAPED " " " LEVEL 1 LARGE CUP 1 BIG CUP HEAPED " " LEVEL 1 MEDIUM CUP	2750 2525 525 450 425 400
WHEAT	500g COWBOY TIN 1 MEDIUM MUG	650
BEAN (KIDNEY)	2 kg KIMBO TIN HEAPED " " " LEVEL 2 kg KIMBO TIN (ROUNDED) 1 kg KIMBO TIN HEAPED " " " LEVEL 1 kg BLUEBAND TIN 500g GLUCOLIN TIN	2525 2250 2325 1025 1000 1000 850
BEAN (MUNG)	2 kg KIMBO TIN HEAPED " " " LEVEL 1 kg KIMBO TIN HEAPED " " " LEVEL 1 kg COWBOY TIN	2675 2500 950 850 1025

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
BEAN (MUNG)	500g GLUCOLIN TIN HEAPED	900
	" " " LEVEL	825
	$\frac{1}{2}$ LITRE ESSO TIN HEAPED	650
	" " " LEVEL	500
	500g GLUCOLIN TIN	800
COWPEA	2 kg KIMBO TIN HEAPED	2500
	" " " LEVEL	2300
	2 kg COWBOY	2275
	1 kg KIMBO	1000
	1 kg BLUEBAND	900
	500g GLUCOLIN TIN HEAPED	825
	1 WANJIKI CUP	150
PIGEON PEA	2 kg KIMBO TIN HEAPED	2625
	" " " LEVEL	2275
	2 kg COWBOY TIN	2325
	1 kg KIMBO TIN HEAPED	2050
	" " " LEVEL	1000
BONAVIST	2 kg KIMBO TIN	2325
	1 kg BLUEBAND TIN	800
	500g GLUCOLIN TIN	800
	500g BLUEBAND TIN	550
POTATO (ENGLISH)	LARGE	137
	MEDIUM	43
	SMALL	26
SWEET POTATO	LARGE	638
	MEDIUM	366
	SMALL	94

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
CASSAVA	LARGE	1058
	MEDIUM	495
	SMALL	155
YAMS	VERY LARGE	3200
	LARGE	1135
	MEDIUM	680
	SMALL	410
ARROWROOTS	LARGE	2833
	MEDIUM	1600
	SMALL	487
GREEN BANANA	LARGE	154
	MEDIUM	117
	SMALL	73
COWPEA LEAVES	BUNDLE	247
SPINACH	1 LEAF	12
CABBAGE	LARGE	1654
	MEDIUM	
	SMALL	695
KALE	PER LEAF	26
TOMATO	EXTRA LARGE	288
	LARGE	106
	MEDIUM	59
	SMALL	31

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
TREE TOMATO	LARGE MEDIUM SMALL	33 28 25
ONION TUBERS	LARGE MEDIUM SMALL	76 32 19
ONION (BULBS W/LEAVES)	LARGE MEDIUM SMALL	30 21 6
CARROTS	LARGE MEDIUM SMALL	213 101 30
SWEET BANANA	LARGE MEDIUM SMALL	150 118 74
PAW PAW	LARGE MEDIUM SMALL	1860 872 488
AVOCADO	LARGE MEDIUM SMALL	510 397 256
ENGLISH PASSION FRUIT	LARGE MEDIUM SMALL	56 39 29

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
PASSION FRUIT	LARGE MEDIUM SMALL	40 26 17
LOQUOTS	LARGE MEDIUM SMALL	10 8 4
SUGARCANE		
COCK	LARGE MEDIUM SMALL	2750 1985 1538
HEN	LARGE MEDIUM SMALL	2144 1226
EGGS	LARGE MEDIUM SMALL	64 45 28

HOUSEHOLD MEASUREMENTS & APPROX. WEIGHTS OF FOOD ITEMS

TABLE 9

ITEM	HOUSEHOLD MEASUREMENT	WEIGHT	No. of TRIALS
SUGAR	$\frac{1}{2}$ Teaspoon	2g	18
	1 Teaspoon level	5g	22
	1 Heaped Teaspoon (small)	8g	22
	1 Heaped Teaspoon (big)	9g	22
	$\frac{1}{2}$ Table spoon	6g	22
	1 Level Tablespoon	10g	22
	1 Heaped Tablespoon (small)	16g	22
	1 Heaped Tablespoon (big)	18g	22
	$\frac{1}{2}$ Cup	179g	22
	1 Level cup	263g	22
	1 Cup heaped (small)	289g	22
	1 Cup heaped (big)		
FAT	1 Heaped Teaspoon	8g	18
	1 Heaped Tablespoon	26g	22
SALT	1 Pinch	3g	22
	$\frac{1}{2}$ Handful	21g	16
	1 Handful	42g	22
	$\frac{1}{2}$ Teaspoon	3g	16
	1 Teaspoon level	21g	16
	1 Teaspoon heaped	9g	12

FOOD ITEM	DESCRIPTION	MEAN WEIGHT (g)
PASSION FRUIT	LARGE	40
	MEDIUM	26
	SMALL	17
LOQUOTS	LARGE	10
	MEDIUM	8
	SMALL	4
SUGARCANE		
COCK	LARGE	2750
	MEDIUM	1985
	SMALL	1538
HEN	LARGE	2144
	MEDIUM	1226
	SMALL	
EGGS	LARGE	64
	MEDIUM	45
	SMALL	28

ITEM	HOUSEHOLD MEASUREMENT	WEIGHT	NO. OF TRIALS
SALT	$\frac{1}{2}$ Tablespoon	6g	5
	1 Level Tablespoon	15g	5
	1 Heaped Tablespoon	20g	5
POWDERED	$\frac{1}{2}$ Teaspoon	2g	7
MILK	1 Teaspoon Level	3g	7
	1 Teaspoon Heaped	8g	13
	$\frac{1}{2}$ Tablespoon	4g	12
	1 Level Tablespoon	6g	12
	1 Heaped Tablespoon	17g	17
	1 Double-heaped Tablespoon	15g	12
	$\frac{1}{2}$ cup	41g	12
	1 level cup	79g	12
1 heaped cup	94g	6	

BEE TOP BOTTLE FULL 7.00-L
 1 Tsp heaped 2 g
 1 Tsp level 1 g
 1 TBS heaped 6 g
 1 TBS level 5 g
 TEA L. 200 g
 1 Pintful 12 g
 1 Glass 70 g
 1 Big cup 135 g
 1 Medium cup 105 g
 1 Small cup 75 g
 2

FOOD INTAKE STUDIES

CONVERSION OF VOLUME (ML) TO WEIGHT (g) COOKED FOOD

1.	Njenga	ml = gm
2.	Porridge	ml = gm
3.	Tea	ml = gm
4.	Uzali pieces	100 ml = 80 gm
	lump	ml = gm
5.	Iric	100 ml = 75 gm
6.	Murthokoi/ <i>KITHARI</i>	100 ml = 75 gm
7.	Rice	100 ml = 50 gm
8.	Rice + stew	100 ml = 75 gm
9.	Potato/Banana dish	100 ml = 75 gm
10.	Fresh beans + greens	100 ml = 75 gm
11.	Stew	
	a. watery	ml = gm
	b. potato, meat, tomatoes	ml = gm
	c. dry greens stew	100 ml = 50 gm
	d. moderate stew	100 ml = 70 gm
	e. pigeon pea stew made	
	from dry peas,	ml = gm

CONVERSION OF COOKED INGREDIENTS TO RAW INGREDIENTS

Maize dry	1000 gm = 500 gm
Beans dry	1000 gm = 500 gm
Maize fresh	1000 gm = 1000 gm
Maize pounded	1000 gm = 500 gm
Beans fresh	1000 gm = 1000 gm
Peas fresh	1000 gm = 1000 gm
Peas dry	1000 gm = 500 gm

NUTRITION CRSP - KENYA PROJECTFOOD INTAKE STUDIESTABLE 11

<u>FOOD ITEM</u>	<u>WASTE (% OF FOOD AS PURCHASED)</u>
Maize (Mbembe)	0
Sorghum (Muvia)	0
Maize flour (Mutu wa mbembe)	0
Millet, Bullrush (Mwere)	0
Millet, Finger (Muginbi)	0
Rice (Mucere)	0
Wheat flour (Mutu wa Ngano)	0
Bean, Kidney (Mboco, Ndumu)	0
Bean, Lima (Noe)	-
Bean, Mung (Ndengu, Ngira)	0
Pea (Minji)	0
Pea, Cow (Nthoroko)	0
Pea, Pigeon (Njugu)	0
Potato, English (Waru)	14
Potato, Sweet (Nwaci)	21
Cassava (Mwanga)	26
Yam (Gikwa)	16
Green banana (Ndigu Mbithi)	32
Taro/Arrow root (Nduma)	16
Leaf, Bean (Nyeni cia mboco)	20
Leaf, Potato (Nyeni cia Waru)	24
Leaf, Cassava (Nyeni cia mianga)	24
Leaf, cowpea (Mthoroko)	24
Cabbage (Mboga)	20
Kale (Cukuma)	24
Tomato (Nyanya)	4
Tree tomato (Matunda na Nthakame)	-

NUTRITION CRSP - KENYA PROJECTFOOD INTAKE STUDIES

<u>FOOD ITEM</u>	<u>WASTE (% OF FOOD AS PURCHASED)</u>
Pumpkin (Irenga)	26
Onion (Gitunguru)	6
Carrot (Karati)	26
Mango (Igembe)	36
Sweet Banana (Ndigu ndune)	32
PawPaw (Evavai)	26
Pineapple (Inaraci)	33
Avocado (Icondovia)	50
Guava (Mbera)	19
Orange (Icungwa)	30
Lemon (Itimu)	41
Passion fruit (Maturda ma Kithaka)	
Eng. Passion fruit (Maturda ma Kithungu).	
Roseberry (Ndare)	
Gooseberries (Macuca)	8
Cashewnuts (Ngoroco)	
Queennut (Nguta)	
Macadamianut (Ngandamia)	
Groundnut (Njugu Karanga)	35
Milk (Iria)	0
Lean meat (Nyara)	23
Eggs (Matumbi)	12
Ghee (Thamuri)	0
Green banana (Ndigu Mbithi)	32
Fat (Waguta makuruga)	0
Sugar (Cukari)	0
Honey (Uuki)	0
Sugarcane (Igwa)	55
Bread (Mugate)	0
Salt (Cumbi)	
Magadi (Igati)	

NUTRITION CRSP - KENYA PROJECT
FOOD INTAKE STUDIES

AVERAGE VOLUMES ML

TABLE 12

CUP	BIG	450
	MEDIUM	350
	SMALL	250
PLATE	BIG	1000
	MEDIUM	750
	SMALL	500
BOWL	BIG	1000
	MEDIUM	750
	SMALL	500
GLASS (NORMAL)		250
DEBE		15000
TREE TOP BOTTLE		700
2 kg KIMBO TIN		2500

TABLE 13 DISTRIBUTION OF PERSONS EATING VARIOUS MEALS, KATHAMUNDE SUBLOCATION

MEAL	PERSONS EATING	FREQ.	PERCENTAGE
BREAKFAST n=33	ADULT MALE	22	10.5
	ADULT FEMALE	50	23.8
	YOUNG MALE	6	2.9
	YOUNG FEMALE	10	4.8
	SCHOOL CHILD	72	34.3
	PRE-SCHOOL CHILD	48	22.9
	INFANT	2	1.0
	TOTAL	210	100.2
LUNCH n=31	ADULT MALE	25	14.0
	ADULT FEMALE	38	20.4
	YOUNG MALE	9	4.9
	YOUNG FEMALE	5	2.7
	SCHOOL CHILD	69	37.1
	PRE-SCHOOL CHILD	39	21.0
	INFANT	-	-
	TOTAL	186	100.1
SUPPER n=35	ADULT MALE	33	17.7
	ADULT FEMALE	44	23.7
	YOUNG MALE	8	4.3
	YOUNG FEMALE	14	7.5
	SCHOOL CHILD	41	22.0
	PRE-SCHOOL CHILD	44	23.7
	INFANT	2	1.1
	TOTAL	186	100.0

BEST
AVAILABLETABLE DISTRIBUTION OF PERSONS EATING VARIOUS MEALS, KATHUNGURI SUBLOCATION

MEAL	PERSONS EATING	FREQ.	PERCENTAGE
BREAKFAST n=40	ADULT MALE	44	15.1
	ADULT FEMALE	64	21.9
	YOUNG MALE	17	5.8
	YOUNG FEMALE	6	2.1
	SCHOOL CHILD	95	32.5
	PRE-SCHOOL CHILD	59	20.2
	INFANT	7	2.4
	TOTAL	292	100.0
LUNCH n=40	ADULT MALE	36	13.7
	ADULT FEMALE	66	25.1
	YOUNG MALE	13	4.9
	YOUNG FEMALE	8	3.0
	SCHOOL CHILD	87	33.1
	PRE-SCHOOL CHILD	53	20.2
	INFANT	0	0
	TOTAL	263	100.0
SUPPER n=41	ADULT MALE	42	15.3
	ADULT FEMALE	61	22.2
	YOUNG MALE	16	5.8
	YOUNG FEMALE	8	2.9
	SCHOOL CHILD	100	36.4
	PRE-SCHOOL CHILD	48	17.5
	INFANT	0	0
	TOTAL	275	100.1

FOOD HABITS

TABLE DISTRIBUTION OF PERSONS EATING VARIOUS MEALS, KARURUWO SUBLOCATION

MEAL	PERSONS EATING	FREQ.	PERCENTAGE
BREAKFAST n=43	ADULT MALE	48	16.4
	ADULT FEMALE	56	19.2
	YOUNG MALE	10	3.4
	YOUNG FEMALE	11	3.8
	SCHOOL CHILD	77	26.4
	PRE-SCHOOL CHILD	80	27.4
	INFANT	10	3.4
	TOTAL	292	100.0
LUNCH n=45	ADULT MALE	51	17.5
	ADULT FEMALE	67	22.9
	YOUNG MALE	13	4.5
	YOUNG FEMALE	19	6.5
	SCHOOL CHILD	68	23.3
	PRE-SCHOOL CHILD	72	24.7
	INFANT	2	0.7
	TOTAL	292	100.1
SUPPER n=47	ADULT MALE	45	16.4
	ADULT FEMALE	64	23.3
	YOUNG MALE	14	5.1
	YOUNG FEMALE	13	4.7
	SCHOOL CHILD	80	29.1
	PRE-SCHOOL CHILD	59	21.5
	INFANT	0	0
	TOTAL	275	100.1

NUTRITION CRSP - KENYA PROJECT

FOOD INTAKE STUDIES

FOOD HABITS

14

TABLE OCCURRENCE OF DISHES SERVED AT BREAKFAST, LUNCH & SUPPER AS WELL AS LEFTOVERS FROM PREVIOUS DAYS (EACH DISH SERVED IS EXPRESSED AS A PERCENTAGE OF THE TOTAL NUMBER OF DISHES SERVED)

	SUBLOCATION		
	KATHANJURE	KATHUNGURI	KARURUMO
<u>BREAKFAST</u>			
Mean no. of dishes served per breakfast	1.1 n=33	1.2 n=40	1 n=43
% Occurrence of			
Tea	42	39	41
Uji	53	52	57
Bread	3	2	2
Gitwero	3	-	-
Others	-	7	-
<u>LUNCH</u>			
Mean no of dishes served per lunch	1.1 n=31	1.1 n=40	1 n=45
% Occurrence of			
Kithari	56	57	76
Gitwero	15	9	11
Mataha	12	9	-
Ugali & Stew	12	9	13
Rice & Stew	-	2	-
Uji	3	1	-
Chapati & Stew	-	9	-
Others	3	5	5
*(n=no of meals)			

NUTRITION CRSF - KENYA PROJECT

FOOD INTAKE STUDIES

FOOD HABITS

TABLE OCCURRENCE OF DISHES SERVED AT BREAKFAST, LUNCH & SUPPER AS WELL LEFTOVERS FROM PREVIOUS DAYS. (EACH DISH SERVED IS EXPRESSED AS A PERCENTAGE OF THE TOTAL NUMBER OF DISHES SERVED)

	SUBLOCATION		
	KATHANJURE	KATHUNGURI	KARURUMO
<u>SUPPER</u>			
Mean no of dishes served per supper	1* n=35	1 n=41	1.1 n=47
% occurrence of:			
Kitheri	51	50	73
Ugali & stew	26	15	6
Chappati & Stew	-	5	-
Rice & Stew	3	2	2
Mataha	3	10	2
Gitwero	6	10	6
Uji Porridge	6	8	-
Others	5	-	10
<u>LEFTOVERS</u>			
Mean no of dishes served as leftovers	1 n=16	1 n=20	1 n=14
% occurrence of:			
Kitheri	63	65	93
Gitwero	25	5	-
Mataha	12	5	-
Tea	-	-	6
Porridge	-	10	-
Gruel	-	10	-
Chappati & Stew	-	5	-
* (n= no of meals)			

TABLE 15 DISHS CONSUMED BY MOTHERS AND PRE-SCHOOL CHILDREN, KATHAMBURE SUBLOCATION

DISH	MOTHERS n=		PRE-SCHOOL CHILDREN n=	
	FREQ.	PERCENTAGE	FREQ.	PERCENTAGE
1. PORRIDGE	22	18.2	59	31.2
2. TEA	25	20.7	14	7.4
3. KITHERI	35	28.9	23	12.2
4. UGALI & STEW	6	5.0	20	10.5
5. GITWERO	8	6.6	28	14.9
6. RICE	1	0.8	2	1.1
7. EGGS	1	0.8	2	1.1
8. BEANS	-	-	2	1.1
9. MATAHA	3	2.5	5	2.6
10. TEA & BREAD	2	1.7	6	-
11. BREAD	1	0.8	-	-
12. UGALI & MITK	2	1.7	-	-
13. BANANAS	-	-	-	-
14. SWEET POTATOES&TEA	1	0.8	1	0.5
15. WATER	1	0.8	1	0.5
16. ARROWROOT & TEA	1	0.8	-	-
17. BREAD & BLUEBAND	-	-	3	1.6
18. UGALI	6	5.0	-	-
19. COW'S MILK	1	0.8	13	6.9
20. PAW PAW	1	0.8	3	1.6
21. SUGARCANE	-	-	3	1.6
22. AVOCADO	-	-	3	1.6
23. PASSION FRUIT	-	-	1	0.5
24. TOMATO	-	-	1	0.5
TOTAL	121	100.0	187	98.9

NOTE: In this sublocation, breast milk was not counted as a dish.

BEST
AVAILABLE

TABLE DISHES CONSUMED BY MOTHERS AND PRE-SCHOOL CHILDREN, KATELEKURI SUBLOCATION

DISH	MOTHERS n=		PRE-SCHOOL CHILDREN n=	
	FREQ.	PERCENTAGE	FREQ.	PERCENTAGE
1. PORRIDGE	30	17.0	62	21.8
2. TEA	43	24.3	24	8.4
3. KITHIRI	41	23.2	36	12.6
4. UGALI & STEW	8	4.5	9	3.2
5. GITNERO	12	6.8	48	16.8
6. RICE & STEW	2	1.1	7	2.5
7. EGGS	-	-	2	0.7
8. TEA & BREAD	3	1.7	-	-
9. WATAHA	11	6.2	5	1.8
10. CHAPATI & STEW	1	0.6	1	0.4
11. BREAD	-	-	5	1.8
12. CHAPATI	2	1.1	-	-
13. PIPE BANANAS	4	2.3	5	1.8
14. ROAST BANANAS	-	-	1	0.4
15. WATER	2	1.1	2	0.7
16. WATER & GIUCOLIN	-	-	6	2.1
17. CHICKEN STEW	1	0.6	-	-
18. SODA	-	-	2	0.7
19. BREAST MILK	-	-	36	12.6
20. COW'S MILK	1	0.6	21	7.4
21. STEW	2	1.1	1	0.4
22. UGALI	2	1.1	-	-
23. COCOA	3	1.7	-	-
24. GRUEL	5	2.8	-	-
25. SUGAR-CANE	2	1.1	-	-
26. CASSAVA	1	0.6	-	-
27. PAW PAW	1	0.6	-	-
28. ORANGE JUICE SQUASH	-	-	3	1.1
29. CERELAC	-	-	2	0.7
30. POWDERED MILK	-	-	7	2.5
TOTAL	177	100.1	296	100.4

BEST
 AVAILABLE

TABLE 15 DISHES CLASSIFIED BY MOTHERS AND PRE-SCHOOL CHILDREN, KATFANJUPE SUBLOCATION

DISH	MOTHERS n=		PRE-SCHOOL CHILDREN n=	
	FREQ.	PERCENTAGE	FREQ.	PERCENTAGE
1. PORRIDGE	22	18.2	49	31.2
2. TEA	25	20.7	14	7.4
3. KITHERI	35	28.9	23	12.2
4. UGALI & STEW	6	5.0	20	10.6
5. GITWERO	8	6.6	28	14.9
6. RICE	1	0.8	2	1.1
7. EGGS	1	0.8	2	1.1
8. BEANS	-	-	2	1.1
9. MATAHA	3	2.5	5	2.6
10. TEA & BREAD	2	1.7	6	-
11. BREAD	1	0.8	-	-
12. UGALI & MILK	2	1.7	-	-
13. BANANAS	-	-	-	-
14. SWEET POTATOES&TEA	1	0.8	1	0.5
15. WATER	1	0.8	1	0.5
16. ARROWROOT & TEA	1	0.8	-	-
17. BREAD & BEEHOND	-	-	3	1.6
18. UGALI	6	5.0	-	-
19. COW'S MILK	1	0.8	13	6.9
20. PAN PAN	1	0.8	3	1.6
21. SUGARCANE	-	-	3	1.6
22. AVOCADO	-	-	3	1.6
23. PASSION FRUIT	-	-	1	0.5
24. TOMATO	-	-	1	0.5
TOTAL	121	100.0	187	98.9

NOTE: In this sublocation, breast milk was not counted as a dish.

BEST
AVAILABLETABLE DISHES CONSUMED BY MOTHERS AND PRE-SCHOOL CHILDREN, KARURUMU SUBLOCATION

DISH	MOTHERS n=		PRE-SCHOOL CHILDREN n=	
	FREQ.	PERCENTAGE	FREQ.	PERCENTAGE
1. PORRIDGE	29	16.9	84	22.1
2. TEA	38	22.1	25	6.6
3. KITHERI	61	35.5	45	11.8
4. UGALI & STEW	11	6.4	19	5.0
5. GITHIRO	12	7.0	78	20.5
6. RICE & STEW	1	0.6	1	0.3
7. EGGS	1	0.6	3	0.8
8. BEANS	1	0.6	5	1.3
9. MATAHA	1	0.6	1	0.3
10. CHAPATI & STEW	3	1.7	1	0.3
11. BREAD	2	1.2	4	1.1
12. UGALI & MILK	-	-	2	0.5
13. RIPE BANANAS	1	0.6	1	0.3
14. SWEET POTATCES	2	1.2	-	-
15. WATER	5	2.9	5	1.3
16. TOBACCO	1	0.6	-	-
17. MEAT & SOUP	1	0.6	-	-
18. SODA	1	0.6	-	-
19. BREAST MILK	-	-	73	19.2
20. COW'S MILK	-	-	23	6.1
21. WATER & SUGAR	-	-	2	0.5
22. RICE	-	-	2	0.5
23. BISCUITS	-	-	1	0.3
24. BLUE-BAND	-	-	2	0.5
25. PASSION FRUITS	-	-	1	0.3
26. PAW PAW	-	-	2	0.5
27. (MACE)	1	0.6	-	-
TOTAL	172	100.3	380	100.1

TABLE 16 USUAL COMPOSITION AND METHOD OF PREPARATION (SEE TABLES: RECIPES LIST)

- OF
- TEA: - Boil water
 - Add tea leaves and milk
 - Boil & remove from fire
 - Add sugar & serve

Note: tea leaves may or may not be filtered. Approximate 20% (w/w) milk & 5-10% (w/w) sugar. Drink from cup/mug/glass.

- UJI (PORRIDGE): - Boil water and/milk or
 - Mix flour(s) with a little cold water.
 - Add flour/water to hot water and stir.
 - Sugar & salt may then be added.

Note: uji may be made from one flour or from a mixture of flours. Uji may be thin, medium or thick in consistency.

- KITHERI: - Maize boiled in water
 (Githeri) - Beans & water added and boiled till ready.
 - Potatoes/bararas may be added & boiled.

Note: Ratio of maize to beans will vary from 0.5:1 to 5:1 depending on taste & availability seasonal/geographical. Tomatoes, green vegetables may be added and boiled as well as salt. Kitheri is often eaten fried. Onion is fried in fat (lard) and kitheri is added and heated.

- GITHIRO: - Beans/cowpeas/pigeon peas, potatoes, bararas are boiled together
 - Onion is fried in lard then the boiled peas/bararas/potatoes is added.
 - The mixture is well mashed and served.

Note: This is a dish given frequently to small children. Often without beans and peas (especially the young ones). The ratio of beans/peas to potatoes and bararas is 0-1:1:2.

- UGALI - This is made from purchased white maize flour (Jogoo). Mixed with water, cooked and stirred until stiff.

Note: Often eaten with stew.

- STEW: - Onions are fried with lard
 - Vegetables/beans/peas, meat may be added in amounts & proportions dependent on taste & availability.
 - Boiled and served (often with ugali or rice).

- NATAHA: - This is similar to kitheri but often containing bararas. It is usually washed and quite stiff.

TABLE 17

RECIPES LIST

DISH/SUBLOCATION	INGREDIENTS	OCCURRENCE OF INGREDIENTS %
<u>KITHERT:</u>		
KATHAMJURE n=50	MAIZE	90
	BEANS	94
	WATER	86
	SALT	16
	FAT	80
	ONIONS	80
	GREEN VEGETABLES	14
	ENGLISH POTATOES	14
	TOMATOES	18
	BANANAS	4
KATHUNGURI n=60	MAIZE	100
	BEANS	78
	WATER	88
	SALT	77
	FAT	62
	ONIONS	62
	COWPEAS	2
	MEAT	5
	ENGLISH POTATOES	15
	GREEN VEGETABLES	7
	MUCHUZI	2
	CURRY POWDER	2
	TOMATOES	3
KARURUMU n=62	MAIZE	97
	BEANS	98
	WATER	97
	SALT	98
	FAT	63
	ONIONS	63
	TOMATOES	16
	ENGLISH POTATOES	8
	COWPEAS	2
	MEAT	2
	ARROWROOT	2

DIETARY STUDIES

FOOD HABITS

TABLE

RECIPES LIST

DICH/SUBLOCATION	INGREDIENTS	OCCURRENCE OF INGREDIENTS %
<u>UGALI & STEW:</u>		
KATHANJURE UGALI n=13	MAIZE FLOUR	100
	WATER	100
STEW n=12	WATER	100
	SALT	91
	ENGLISH POTATOES	76
	ONIONS	90
	CABBAGE	27
	SUKUMA	18
	TOMATOES	18
	BEANS	18
	COWPEAS	36
	MILK	9
MEAT	9	
	PUMPKIN LEAVES	9

KATHUNGURI UGALI n=9	MAIZE FLOUR	100
	WATER	100
	SALT	11
STEW n=8	WATER	98
	SALT	88
	FAT	63
	ONIONS	88
	ENGLISH POTATOES	50
	SUKUMA	13
	TOMATOES	50
	COWPEA LEAVES	53
KARURUMO UGALI n=9	MAIZE FLOUR	100
	WATER	100
STEW n=9	WATER	100
	SALT	67
	FAT	55
	ENGLISH POTATOES	44
	BEANS	11
	COWPEAS	11
	TOMATOES	22
	COWPEA LEAVES	11
	SUKUMA	22
	CARROTS	11
	CABBAGE	22
MEAT	22	

BEST
AVAILABLETABLERECIPES LIST

DISH/SUBLOCATION	INGREDIENTS	OCCURRENCE OF INGREDIENTS %
UJI: KATHANGURE n=22	WATER	100
	MILLET FLOUR	8
	SORGHUM FLOUR	70
	FERMENTED SORGHUM FLOUR	8
	MAIZE FLOUR	48
	SUGAR	57
	MILK	26
	SALT	8
	MARGARINE	4
KATHINGURI n=30	WATER	100
	MILLET FLOUR	37
	SORGHUM FLOUR	67
	MAIZE FLOUR	50
	FERMENTED FLOUR (MIXTURE)	10
	WHOLE WHEAT FLOUR	7
	SUGAR	63
	MILK	27
	SALT	10
LEMON JUICE	7	
KARURUMO n=24	WATER	79
	MILLET FLOUR	8
	SORGHUM FLOUR	67
	FERMENTED SORGHUM FLOUR	4
	MAIZE FLOUR	67
	SUGAR	58
	MILK	42
	SALT	8
	LEMON JUICE	4
BEANS	8	

NUTRITION CRSF - KENYA PROJECT

FOOD INTAKE STUDIES

FOOD HABITS

TABLE

RECIPES LIST

DISH/SUBLOCATION	INGREDIENTS	OCCURRENCE OF INGREDIENTS (%)
<u>TEA:</u>		
KATHANJURE n=17	TEA-LEAVES	88
	SUGAR	100
	WATER	100
	MILK	82
KATHINCURI n=28	TEA-LEAVES	93
	SUGAR	82
	WATER	100
	MILK	82
KARURUNO n=17	TEA-LEAVES	100
	SUGAR	100
	WATER	100
	MILK	70

DISH/SUBLOCATION

INGREDIENTS

OCCURRENCE OF INGREDIENTS %

GITHWERO:

KATHANJURE

n=20

WATER	70
ENGLISH POTATOES	25
BANANAS	40
FAT	40
SALT	60
ONIONS	30
BEANS	15
PICEAN PEAS	5
TOMATOES	10
ARROWROOTS	5
KNCPR (FLAVORING)	10

KATHUNGURI

n=8

WATER	100
ENGLISH POTATOES	88
BANANAS	100
FAT	88
ONIONS	75
BEANS	38
CCWPEAS	88
PEAS	13
TOMATOES	13

KARURUMU

n=9

WATER	100
ENGLISH POTATOES	67
BANANAS	78
FAT	55
SALT	100
ONIONS	55
BEANS	33
CCWPEAS' LEAVES	11
CCWPEAS	22
PEAS	11
TOMATOES	22
CASSAVA	11
MAIZE	11

FOOD INTAKE STUDIES

FOOD HABITS

ASIE

RECIPES LIST

DISH/SUBLOCATION	INGREDIENTS	OCCURRENCE OF INGREDIENTS %
<u>MATAHA:</u>		
KATHANJURE n=5	WATER	100
	SALT	100
	MAIZE	100
	GREEN VEGETABLES	80
	BEANS	60
	BANANAS	20
	PUMPKIN	20
KATHANGURI n=8	WATER	75
	SALT	88
	MAIZE	100
	FAT	25
	COFFEAS	38
	POTATOES	25
	BANANAS	75
	ONIONS	38
	SUKUMA	13
BEANS	50	
ARROWROOT LEAVES	13	

NUTRITION CRSP - KENYA PROJECT

FOOD INTAKE STUDIES

FOOD HABITS

TABLE 18

SNACK-EATING BY MOTHERS

(BASED ON ONE-DAY RE-CALL)

	KATHANJURE	KATHUNGURI	KARURUMO
No of mothers studied	38	41	42
Mean no of all dishes (including snacks) eaten by the mother.	3.0 (115/38)	2.9 (118/41)	1.8 (75/42)
Proportion of mothers eating snacks	0.4 (16/38)	0.5 (20/41)	0.3 (14/42)
	%	%	%
Type and percent occurrence of snacks eaten	Milk 4	-	-
	Tea 38	Tea 34	Tea 32
	Uji 35	Uji 26	Uji 28
	Eggs 4	-	-
	Barara 12	Barara 6	Barara 4
	Paw Paw 4	Paw Paw 3	-
	Sweet Potato 4	-	-
	-	Sugarcane 6	-
	-	Gitwero 3	Gitwero 4
	-	Stew 3	-
	-	Cocoa 14	-
	-	-	Bread 12
	-	-	Soup 12
	-	-	Chapati 4
	-	-	Maage 4
Mean no of snacks eaten per mother	1.6	1.8	1.8

NUTRITION CRSP - KENYA PROJECT

FOOD INTAKE STUDIES

FOOD HABITS

TABLE

SNACK-EATING BY PPE-SCHOOL CHILDREN

(BASED ON ONE-DAY RECALL; NOT INCLUDING BREAST-MILK)

	KATHANJURE	KATHUNGURI	KARURUMO
No of children studied	43	45	41
Mean no of all dishes. (including snacks) eaten by the child	2.9 (123/43)	3.0 (135/45)	3.3 (135/41)
Proportion of children eating snacks	0.7 (29/43)	0.6 (27/45)	0.7 (30/41)
Type and percent occurrence of snacks eaten	Milk 10 Uji 31 Avocado 9 Tea 7 Egg 3 Sweet potato 3 Sugarcane 7 Bananas 5 Paw Paw 5 Passion fruit 2 Rice 2 Ugali&stew 2 Gitwero 10 Mataha 2 Tomatoes 2 Biscuits 2	Milk 27 Uji 31 Tea 12 Egg 2 Sugarcane 2 Banana 12 Rice 4 Gitwero 8 Orange juice 2 Gruel 6 Bread 2	Milk 14 Uji 44 Tea 10 Bananas 2 Paw Paw 2 Passion fruit 2 Ugali&stew 2 Gitwero 12 Beans 2
Mean no of snacks eaten per child	2.0	1.9	1.6

FOOD INTAKE STUDIES

FOOD HABITS

TABLE 19

DISTRIBUTION OF FOOD TYPES CONSUMED BY HOUSEHOLD
(BASED ON 7-DAY RECALL) BY FOOD GROUPS

	KATHANJURE		KATHUNGURI		KARURUMO	
	FREQ.	%	FREQ.	%	FREQ.	%
<u>A. CEREALS</u>						
MAIZE (Mbembe)	37	28	43	25	44	28
MAIZE FLOUR (Mutu wa Mbembe)	30	23	40	24	36	23
SORGHUM (Muvia)	35	26	32	19	36	23
MILLET, BULLRUSH (Mwere)	7	5	28	16	14	9
MILLET, FINGER (Mugimbi)	0	0	0	0	2	1
RICE (Mucere)	11	8	9	5	10	6
WHEAT FLOUR (Mutu wa Ngano)	13	10	18	11	17	11
<u>B. GREEN LEGUMES</u>						
BEAN, KIDNEY (Mboco, Nduru)	36	64	43	43	44	42
BEAN, LIMA (Noe)	0	0	1	1	1	1
BEAN, MUNG (Ndengu, Ngira)	1	2	6	6	6	6
PEA (Minji)	0	0	2	2	4	4
PEA, COW (Nthoroko)	13	23	36	36	30	27
PEA, PIGEON (Mjugu)	6	11	13	13	25	24
<u>C. STARCHY ROOTS AND TUBERS</u>						
POTATO, ENGLISH, (Waru)	28	27	40	31	36	23
POTATO, SWEET (Ngwaci)	17	16	12	9	35	23
CASSAVA (Mwanga)	9	9	17	13	22	14
YAM (Gikwa)	3	3	6	5	3	2
GREEN BANANA (Ndigu Mbithi)	30	29	41	32	38	25
TARO/ARROWROOT (Nduma)	18	17	14	11	21	14
NE NO. of HH visited	37		43		44	

	KATHANJURE		KATHUNGURI		KARURUMO	
D. VEGETABLES	FREQ.	%	FREQ.	%	FREQ.	%
LEAF, BEAN (Nyeni cia Waboco)	1	11	3	2	5	2
LEAF, POTATO (Nyeni cia Waru)	1	1	4	3	1	1
LEAF, CASSAVA (Nyeni cia Mianga)	0	0	0	0	0	0
LEAF, COWPEA (Mathoroko)	8	8	8	6	20	14
CABBAGE (Mboga)	14	15	23	18	17	12
TOMATO (Nyanya)	24	23	25	20	30	22
KALE (Cukura)	12	12	21	17	13	9
TREE TOMATO (Matunda ma Nthakame)	4	4	4	3	3	2
PUMPKIN (Ireng)	2	2	2	1	1	1
ONION (Gitunguru)	33	32	40	31	40	29
CARROT (Karati)	3	3	6	5	8	6
<u>FRUITS E.</u>						
MANGO (Igembe)	4	4	11	9	3	3
SWEET BANANA (Ndigu rdure)	13	14	24	19	35	31
PAW PAW (Evavai)	22	23	20	16	24	21
PINEAPPLE (Iranaci)	3	3	4	3	4	4
AVOCADO (Icordovia)	11	12	5	4	3	3
GUAVA (Mbera)	3	3	6	5	3	3
ORANGE (Icungwa)	6	6	20	16	13	12
LEMON (Itimu)	6	6	22	17	9	8
PASSION FRUIT (Matunda ma Kithaka)	8	9	5	4	11	10
ENGLISH PASSION FRUIT (Matunda ma Kithungu)	7	7	5	4	4	4
ROSEBERRY (Ndare)	0	0	5	4	0	0
GOOSEBERRIES (Vacuca)	1	1	1	1	3	3
<u>F. NUTS</u>						
CASHEW NUTS (Ngorocula)	0	0	0	0	0	0
QUEEN NUT (Nguta)	1	8	0	0	0	13
MACADAMIA NUT (Ngandamia)	9	69	16	89	4	50
GROUND NUT (Njugu Karanga)	3	23	2	11	3	38

	KATHANJURE		KATHUNGURE		KARURUMO	
<u>G. ANIMAL PRODUCTS</u>	FREQ.	%	FREQ.	%	FREQ.	%
MILK (Iria)	27	48	41	42	39	43
MEAT (Nyama)	15	27	29	30	26	29
EGGS (Matumbi)	14	85	28	29	25	28
<u>H. SUGARS</u>						
SUGAR (Cukari)	30	56	45	62	41	56
HONEY (Uuki)	4	7	4	5	2	3
SUGARCANE (Igwa)	20	37	24	33	30	41

WEIGHED FOOD INTAKE - PILOT

HOUSEHOLD FOOD FORM:

TABLE 20

1. One form to be filled in per dish.
2. TIME: Record the time the dish is prepared.
3. INGREDIENTS: Record the name of the dish. List the ingredients that make up the dish.
4. FOOD DESCRIPTION: Indicate (as before) the types of food, brand names etc.
5. WEIGHT AS PURCHASED OR COLLECTED: Weigh each ingredient before it is prepared for cooking and/or eating (ie potatoes with skin, whole paw paw) and record the weight in this column.
6. WEIGHT AS COOKED OR EATEN: Weigh each ingredient as it is about to be cooked or eaten ie the weight of the edible portion of the food.
7. WEIGHT OF REFUSE: The difference between weight as purchased or collected and weight as cooked or eaten.
8. WEIGHT OF COOKING POT EMPTINESS: Record the weight of the cooking pot (sufurias etc) before the ingredients are added.
9. TOTAL WEIGHT OF PREPARED OR COOKED FOOD: Record the weight of the cooking pot plus food after the food has been cooked or prepared.
10. PERSONS EATING: As before, indicate the number of AM, AF, YM, YF, SC, PS & I that ate the dish.
11. TOTAL WEIGHT LEFTOVER: The weight of the cooked or prepared food that is not eaten at that meal ie the weight of the cooking pot once the meal is finished.
12. NET AMOUNT OF FOOD EATEN: The difference between what is cooked or prepared and what is left over.

NOTES

- (a) Food prepared and eaten before the arrival of the field worker should be estimated by recall using the same format as before.
- (b) Food prepared and eaten after the departure of the field worker cannot be recorded. However before leaving the home the field worker should ask what and how much is to be eaten after her departure.
- (c) If food is prepared before the arrival of the field worker and eaten in her presence, the details of the preparation should be obtained by recall. This includes leftovers from previous days, gruel etc. If food is prepared in the presence of the field worker but eaten after she has left that same evening, the preparation should be weighed as usual ie each ingredient before and after preparation etc. The field worker should also enquire as to who is to eat this food and about how much is to be eaten.

IRITPA CRSP - KENYA PROJECT
ELIMINARY SURVEY 1982 (PILOT)

WEIGHTED FOOD INTAKE

HOUSEHOLD FOOD

MO YR HOUSEHOLD NO

RESPONDENT'S NAME

ENUMERATOR'S NAME

INGREDIENTS	FOOD DESCRIPTION	WEIGHT AS PURCHASED OR COLLECTED	WEIGHT AS COOKED	WEIGHT OF RESIDUE	WEIGHT OF COOKING POT EMPTY	TOTAL WEIGHT OF PREPARED OR COOKED FOOD	PERSONS EATING	TOTAL WEIGHT LEFTOVER	NET AMOUNT EATEN
DISH									

WEIGHED FOOD INTAKE - PILOT

INDIVIDUAL FORM

TABLE 27

The individuals of interest are:

1. Mother
2. School-age child (5-12)
3. Pre-school child or and Infant (less than 5)

1. One or ~~each~~ ^{more} forms to be filled for each individual.
2. TIME: Indicate the time the food was eaten.
3. DISH: Record the name of the dish.
4. WEIGHT OF EATING UTENSIL EMPTY: Record the empty weight of the utensil in which the food is to be served.
5. WEIGHT OF EATING UTENSIL PLUS FOOD: Record the weight of the plate/cup/bowl etc with the food.
6. WEIGHT OF ADDED INGREDIENTS: If any ingredient such as salt, fat, sugar etc is added to the eating utensil (plate/cup/bowl etc) prior to eating or during the meal record the weight first and specify what is it.
7. WEIGHT OF UTENSIL AFTER EATING: Weigh the eating utensil (plate/cup/bowl etc) after the individual has stopped eating and, before the utensil is washed.
8. NET WEIGHT EATEN: The difference between what is placed in the plate/cup/bowl etc before eating and what is leftover after eating.

NOTES

- (a) Try to disturb the home as little as possible. Allow the person(s) preparing the food and individual(s) eating to carry on their daily lives as normally as possible. Do not assist the food preparer in the task of preparing food. Do not accept food (BRING YOUR OWN). Remember you are there simply to observe and record.
- (b) Weigh everything (if in doubt weigh and record). If a mother eats at a different place from the children (ie the school child) stay with the mother and the small child. Question the school child on what and how much she/he ate whilst away.