DN 2469

THE GHANA LIVING STANDARDS SURVEY

FLOWCHART OF PRELIMINARY ACTIVITIES

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I N T R O D U C T I O N

To set up any household survey, a large number of preliminary activities must be carried on by many people in a coordinated way.

In the case of the Ghana Living Standards Survey, the situation is more delicate because of the application of personal computers for data entry in the field. Personal computers have been largely responsible for the success of living standards surveys elsewhere, but the introduction of these machines entails much more than just adding a new technology to an already existing method. The whole survey must be structured differently, and this makes planning harder.

The following flowchart shows in a schematic way the most important activities that must be completed prior to setting up the survey in the field. This is not a standard "project management" chart in two senses: (1) It lacks some formal features, like fictitious activities to identify each task by its nodes with no ambiguity, and (2) There are no duration estimates for the tasks in the flowchart.

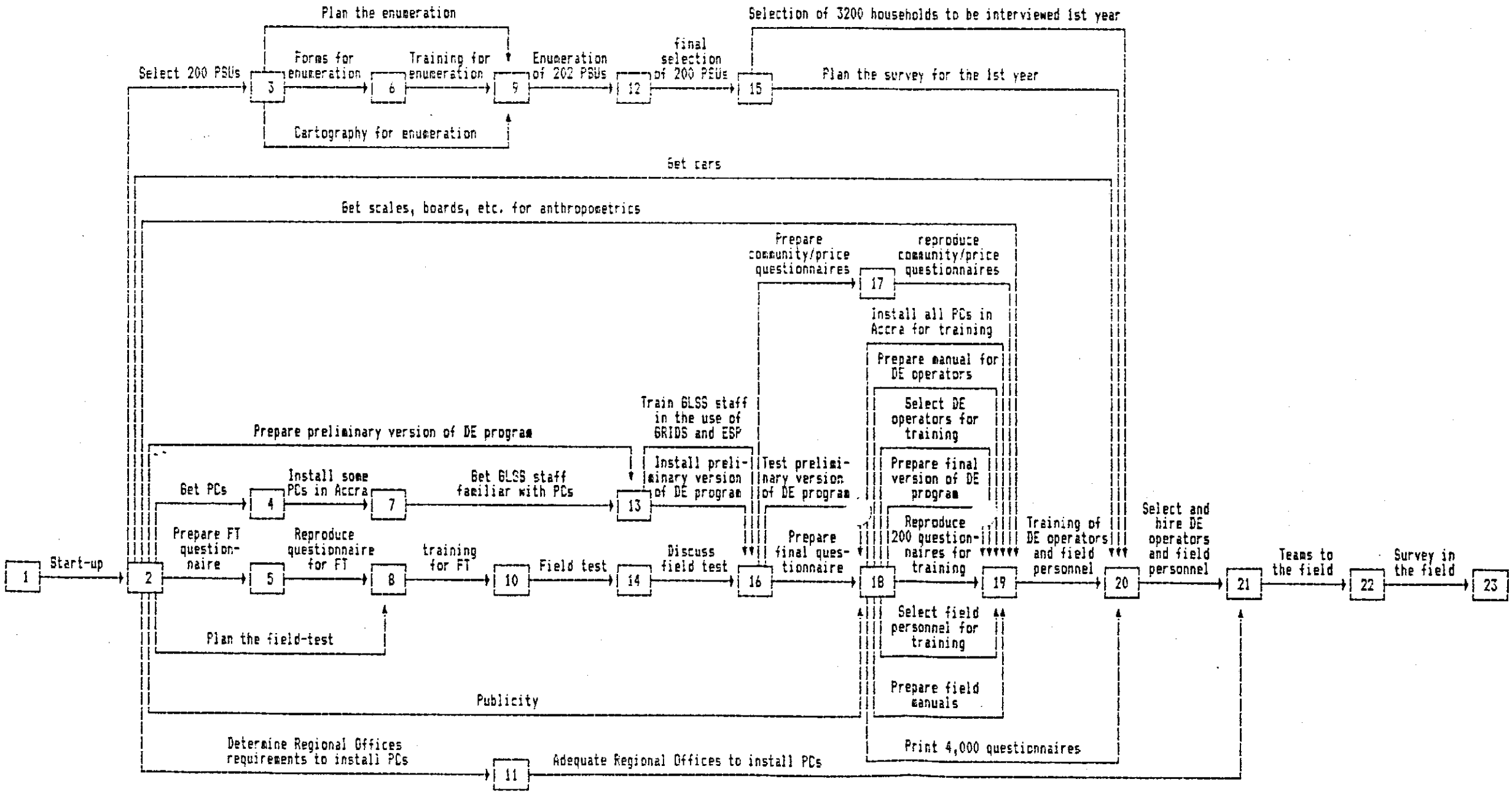
Mi mission was too short to discuss the flowchart thoroughly with the GSS staff, and establish reliable duration estimates. An additional problem is that many of the activities that appear as parallel in the flowchart will have to be carried on sequentially in practice because they will share the same scarce resources (staff, cars, etc.)

Ideally, durations and resources should be added to the flowchart, and then it could be used to schedule the preliminary activities realistically. As it is, the chart can still be useful as a management tool, to help everybody see the road ahead, and the many connections between the tasks involved. Particularly, it shows the activities that must be completed before endeavoring any particular task.

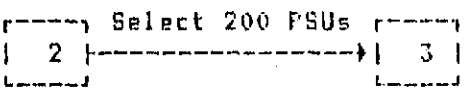
There follows the flowchart itself, and a brief description of each activity.

T H E G H A N A L I V I N G S T A N D A R D S S U R V E Y

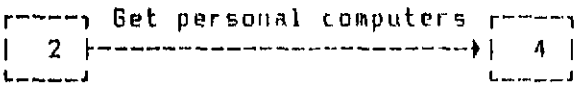
F L O W C H A R T O F P R E L I M I N A R Y A C T I V I T I E S



INDEX OF PRELIMINARY ACTIVITIES



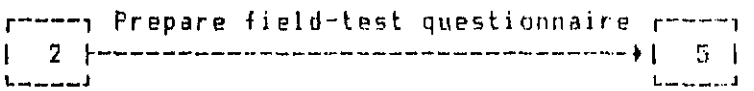
200 PSUs must be selected with probabilities proportional to their sizes (PPS), "size" being defined as the number of households in the PSU at the 1984 census. As a complete listing of PSUs is available in computer readable form, I discussed with Mr. Amenuvegbe and Mr. Arkoh-Koomson the broad lines of a program to select the PSUs by computer.



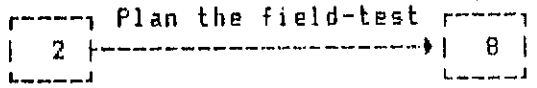
The machines will be ordered from a computer dealer in Accra. Apart from the 13 computers and printers, some other computer-related equipment is necessary for GLSS: printer cables, surge protectors, uninterrupted power suppliers, air conditioners and dust covers (to help keep the dust away from the machines at the Regional Offices), and locks, chains or padlocks (to make them secure).

Also, an initial inventory and a steady refurnishing of some supplies must be considered. Experience in Côte d'Ivoire suggests the following rates by month and by computer:

- 2,000 pages of computer paper.
- 1 printer ribbon
- 20 floppy diskettes (some of which may be recycled).



The standard LSS questionnaire was adapted to the Ghana realities during Paul Glewwe's mission last November. Now I'll change the pages in the floppy diskettes using ESP and GRIDS, produce one sample questionnaire, and the master pages, and send them to Accra for reproduction.



Some of the questions to be answered before the field- test starts are:

- Where is the field- test going to take place?

  Locations should be selected so as to represent the many different environments likely to be found during the actual survey. This refers to the agricultural and ecological environments (urban and rural areas, forest, savanna, lake and seashore regions), but also to the multiple life styles associated with different economic activities (fishermen, taxi drivers, public servants, peddlers, etc.), ethnic groups or religions.

- How many households are going to be interviewed?

  Experience in Côte d'Ivoire and Perú shows that at a least one hundred households will have to be observed.

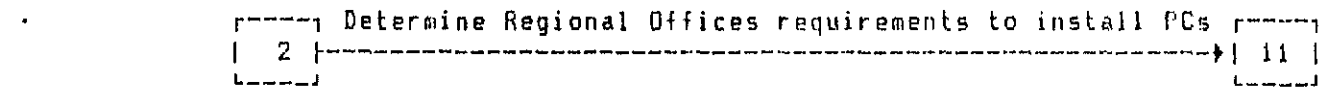
- How long will the field- test last?

  The actual survey consists of two rounds, two weeks apart. During the field- test, the interval between visits could be reduced to one week, if necessary. Therefore, two weeks is the minimum time that can be considered to schedule the field- test. Even that can be too optimistic if the number of qualified staff available is not enough.

- Who will participate in the field- test?

  The staff in charge of the field- test must be of the very best quality. They should understand thoroughly the objectives of each section of the questionnaire to appraise critically if the questions are being asked and answered correctly. If errors are detected, the staff should be able to try different wordings, and sometimes alternative approaches.

Logistics must also be considered at this stage, to ensure the opportune availability of transportation, lodging and so forth, for all the staff involved.



An inventory of the Regional Offices current situation is necessary to determine:

- The availability of premises to install Personal Computers.

  At least a small room is required in each Regional Office, that can be locked securely and has a couple of tables and chairs for the data entry operator. There should also be drawers or shelves to store the questionnaires, diskettes and so forth.

  The room should be free of dust and, eventually, air-conditioned.

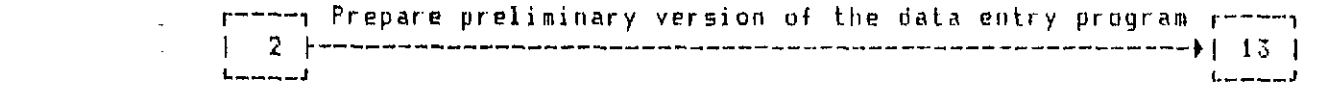
- The electrical supply.

  Ideally, electricity should be available all or most of the time, and be of a standard voltage, free or surges and spikes.

  If power supply is erratic or inexistent, adequate corrective actions should be foreseen for some Regional Offices.

Apart from the GSS headquarters in Accra, there are eight GSS Regional Offices likely to receive computers: Cape Coast, Sekondi, Kumasi, Koforidua, Sunyani, Ho, Bolgatanga and Tamale. The optimal allocation of Regional Offices to field teams, however, can only be done after the actual 200 PSUs where the survey will take place are determined (see activities 12-15: "Final Selection of 200 PSUs" and 15-20: "Plan the Survey for the 1st year"). Then it can very well happen that there are so few PSUs around some Regional Office (Bolgatanga, in the far North, for instance), that it may be better not to use it as a team center after all.

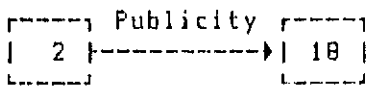
It is important to define emergency procedures in case of the temporary failure of a computer, or an operator's absence. Maybe the most important part is to define a reliable system of communications with the Accra GSS headquarters.



I will prepare a preliminary version of the data entry program on the basis of the questionnaire used for field- test.

This version will need modifications and improvements because: (1) The questionnaire itself will evolve after the field- test, (2) Some of the encodements have not been defined at this stage, and (3) Errors are likely.

The preliminary version is important, though, because it will be used to train the GLSS programmers (see activity 13-16 "Install preliminary version of the data entry program below"). It is important to progress from very early in the development of the data entry program, so that programming does not become a bottleneck toward the end of the preparations.



The following procedures have been used successfully in Côte d'Ivoire and Perú to make the respondents sensitive to the survey:

- Direct brochures addressed to the heads of the selected households. In rural areas the brochures are distributed through the local village chiefs or other authorities, who receive a personal letter from the maximum responsible of the survey.

  These brochures have proved to be very effective, even when the heads of the households are illiterate. It is important to foresee them well in advance, to think through the contents, and to ensure a good quality printing, ideally in color and with some graphics.

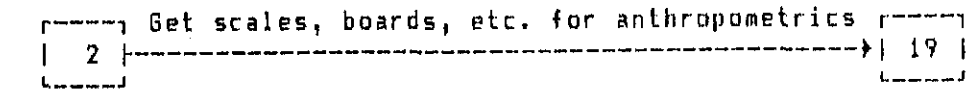
- Mass publicity, through the newspapers, radio and TV stations.

  Mass media publicity seems like a waste because it is largely diluted in the whole population, instead of the relatively small sample to be interviewed. Also, the cost of media publicity makes it difficult to consider it as a continued activity.

  At the beginning of the survey, however, it can improve the field staff self- confidence and morale. With good planning and public relations, and taking advantage of the "show effect" of the personal computers, media publicity can be available for free then.

- Other things that could be done at a moderate cost are: (1) To device a standard logo for the survey, and endow the interviewers with tee-shirts and/or badges with that logo and (2) To give away some very small gift, like a notebook or a calendar, to the respondent households.

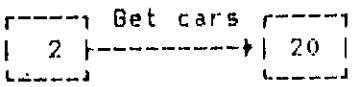
  If gifts are given, it is important that they have no intrinsic value whatsoever, lest management complexities.



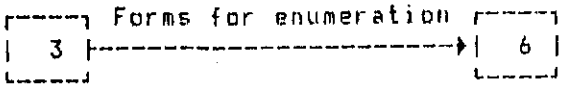
Each team must be endowed with the following equipment:

- One scale for adults.
- One scale for babies.
- One measuring board or tape for adults.
- One board for babies.
- Suitable carrying cases or other protective accessories.

A few spares should also be acquired to replace the materiel that is likely to break down or get lost during the survey.

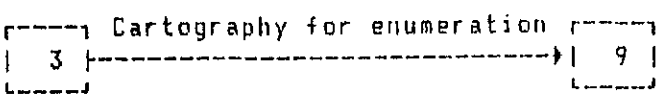


A car and a trained driver are assigned to each team, and the obvious logistic arrangements have to be considered, to ensure continued operation (gas, spare parts, etc.). It is also important to define emergency procedures in case of the temporary failure of a car.

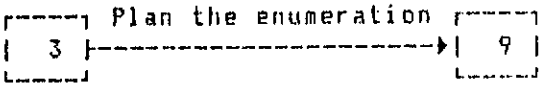


The data to be recorded in each household are: (1) The name of the head of the household, (2) The household size, and (3) Any other element that can help locate the household in the field (like the street address, when available).

Eventually, the forms used for the 1984 census can be used as a model.



Copies of the maps used during the 1984 census in the selected PSUs should be made available to the enumeration staff.



Some of the points to be addressed are:

- Staffing.

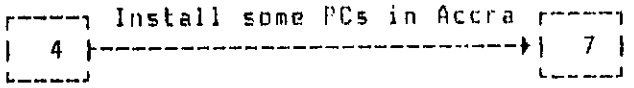
  This point is especially important because the same personnel will probably be involved in other preliminary activities for GLSS, like field- testing. It is likely that at least one man-day will be needed to enumerate each enumeration area, not considering the time necessary to reach the place, so this is a very time- consuming activity. If a large staff is involved, then an organizational scheme is needed to supervise the job.

- Schedule.

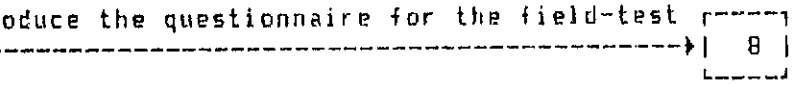
  Once the teams are determined, an optimal schedule will have to be defined to minimize transportation costs, and make the work loads of the teams even.

- Logistics.

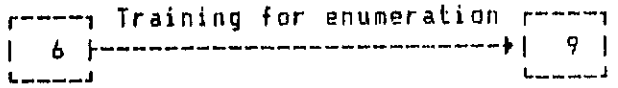
  Staff transportation and lodging during the enumeration have to be ensured.



All the computers and related equipment should be unpacked and tested. Those intended to be installed in the Regional Offices, however, should be repacked and stored safely afterward. The computers that will stay in Accra, for the use of the GLSS staff, must be installed in proper premises as soon as possible.



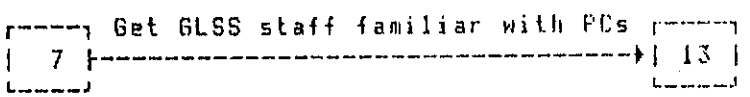
At least 150 copies of the questionnaire will be reproduced in Accra. Given the time constraints, probably the best way to reproduce the questionnaires for the field- test is to photocopy and paginate directly at GSS, with the same staff that will participate in the field-test.



Training for enumeration should emphasize: (1) the enumeration of every household in each selected PSU, and (2) an easy retrieval of the selected household's afterward.

If street addresses are not available, the second objective can be approached by recording at least the name of the head of the household, and the household size. Enumeration should take place so that two households that are close to each other in the field are also close in the enumeration listing.

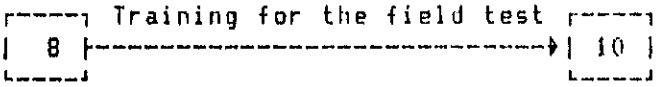
Though enumerators are not supposed to perform the same kind of thorough scanning of household members that will take place in the actual survey, they should be taught the definition of a household, as used in the GLSS, in order to minimize biases, especially in the case of compounds.



As many staff as possible should get familiar soon with the elementary operation of personal computers. Everybody should read the small DOS tutorial that comes with each computer, to learn how to manipulate diskettes, and how to use the following commands:

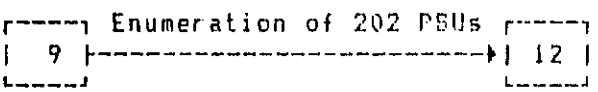
- FORMAT, to format new diskettes.
- DIR, to look at the contents of a diskette.
- DISKCOPY, to copy diskettes.
- DISKCOMP, to compare diskettes.
- COPY, to copy files.
- COMP, to compare files.
- ERASE, to delete files from a diskette.

Additionally, programmers who will be responsible for the data entry program should also try to get experienced with the BASIC interpreter, that comes also with each computer. The DOS diskette has some sample BASIC programs that can be observed and studied.

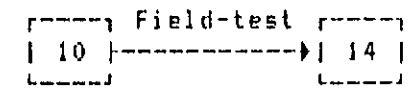


It is critical that the staff involved in the field- test understand thoroughly the purpose of each section and question in the questionnaire. This is the only way to ensure that the respondents are really answering the right questions. Only well trained and competent staff will be able to change, delete or add to the questionnaire in a sound way.

This one activity in which the experience of The World Bank's Living Standards Unit (LSU) is most essential. I highly recommend the involvement of a consultant like Paul Glewwe. Also, two documents from LSU will be extremely helpful, and should be read by all the staff involved in the field- test [*].



Apart from the 200 PSUs selected randomly for the survey itself, two additional PSUs must be selected and enumerated at this stage, to be used as test PSUs during training. One of them should be urban and other rural, and they should be close to the GSS premises (or wherever training is supposed to take place).



As with all field operations, field test will only be successful if all or most of it is planned (see activities 2-5 "Prepare the questionnaire for field- test", 2-8 "Plan the field- test", 5-8 "Reproduce the questionnaire for field- test" and 8-10 "Training for field- test" above), and little or nothing is improvised. A good communication system between the different people involved in the field-test should be established, however, in case some last- moment experience or instruction deserves to be shared.

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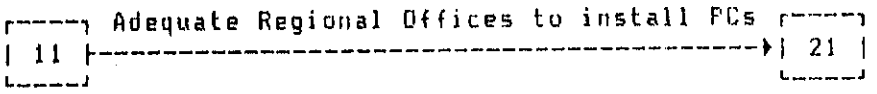
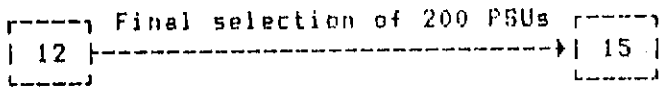
[*] Ainsworth, M. and van der Gaag, J. "Guidelines for Adapting the Living Standaros Survey to Local Conditions" (draft), Washington, November 1986.

Grootaert, C; "Measuring and Analyzing Levels of Living in Developing Countries: An Annotated Questionnaire", LSMS Working Paper N° 24, Washington, 1986.

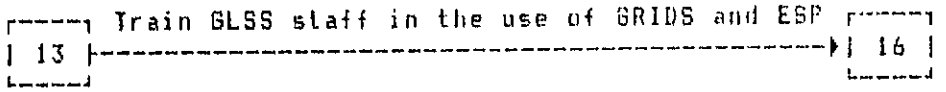
The anthropometric section of the survey will probably not be field- tested because: (1) That would introduce an additional complexity to an activity that is already quite delicate, (2) Technicians and anthropometric equipment are not available yet, and (3) That part of the survey is not likely to differ too much from other countries' experiences.



Where necessary (see activity 2-11: "Determine Regional Offices requirements to install PCs"), Regional Offices should be adapted to receive the personal computers.



As the actual number of households found in each PSU after the enumeration will differ from the PSU "size" used in activity 2-3 above, a corrected final selection of 200 PSUs will be performed at GSS headquarters. The procedure was described by Chris Scott and Ben Amenuvegbe [*].



GRIDS is a special- purpose program used to design and draw most of the GLSS household questionnaire with floppy diskettes on a personal computer. ESP is a word processor that will be used to prepare some sections of the household questionnaire, as well as the community and price questionnaires and all the field manuals.

It is essential that all the GLSS staff (and not only computer programmers!) are trained in the use of these programs. Most of the subsequent activities will require that everybody uses ESP and GRIDS intensely.

Training of GLSS staff in the use of GRIDS and ESP can be scheduled to take place during my mission to install the preliminary version of the data entry program (see activity 13-16 below).

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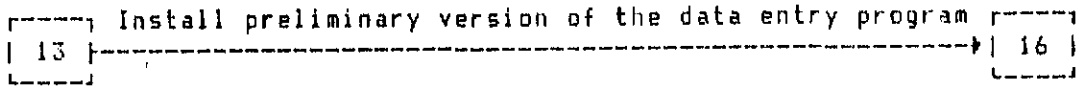
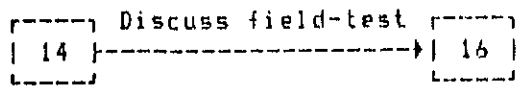
[*] Scott, C. and Amenuvegbe, B; "Ghana Living Standards Survey: Recommended Sample Design", Accra, October 1986.



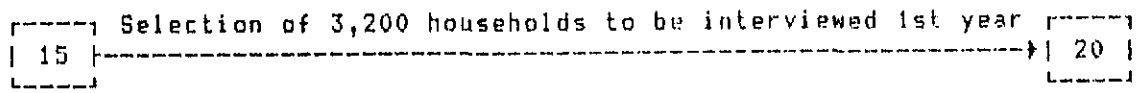
This preliminary version of the data entry program will be developed on the basis of the questionnaire used for the field- test. As the questionnaire will change a lot after field- test, the program will need modifications as well. The purpose of this preliminary version is to train the GLSS programmers in the inner workings of the program, so that they can modify it reliably.



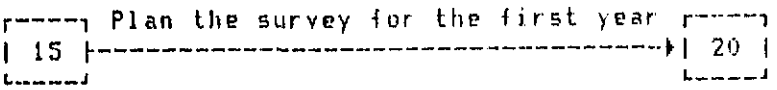
Discussion and redesign of the questionnaire must take place at Accra headquarters immediately after the field- test. All the GLSS staff who participated in the field- test should meet to combine the individual experiences.

Those responsible for finalizing the questionnaire (see activity 16-18 "Prepare final questionnaire" below) must assist to all meetings and make sure that the conclusions are clearly established in the questionnaire.

This is another activity in which the participation of The World Bank's Living Standards Unit is essential to ensure the coherence between the final questionnaire and the objectives of the survey.



Sixteen households will be randomly selected in each PSU. The identification of the selected households has to be made available to the field teams in a standard way, preferably by giving the team supervisor a copy of the enumeration form, with the selected households marked on it.

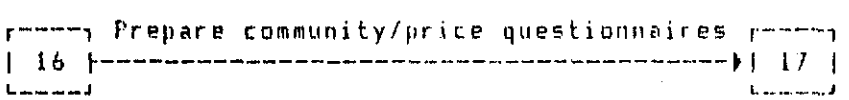


The 200 selected PSUs are plotted in a map, and then classified in 10 groups of 20 PSUs each, one for each field team. The grouping should minimize the average travel time from each team's headquarters and the PSUs assigned to that team.

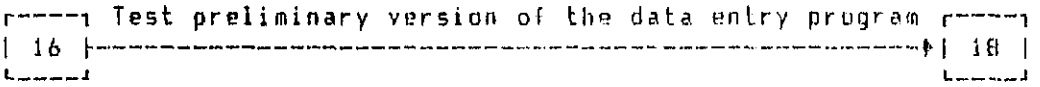
Next, the 20 PSUs of each team are randomly permuted to determine the order in which they will be visited through the year (a random permutation can be done easily with a personal computer). Finally, a Survey schedule is done that shows where is each team is supposed to be in each week of the first year.

Probably the best way to schedule the survey is to divide the year into five ten- week periods, plus two extra weeks. In any period, each field team works during eight weeks (four for one couple of PSUs and four for another couple), and rests or catch up for any retard during the other two weeks.

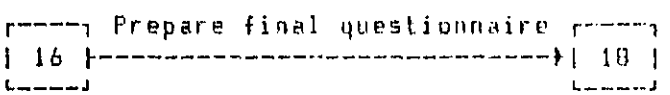
The two extra weeks can be used to bring everybody to Accra on two occasions: (1) at the end of the first period, to monitor the survey start- up, which is always delicate, and (2) at the end of the last period, to give additional instructions for the second year of the survey.



These questionnaire can be prepared by GLSS staff in Accra once they are trained in the use of the ESP word processor.

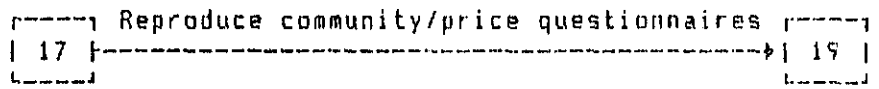


GLSS programmers will be responsible for testing the program thoroughly. They will also add to the Dictionary of Variables all the long encodements of qualitative variables that were not available before. Some of these encodements are those for regional location, activities and occupations. Ideally, GLSS programmers should try to correct the errors that are detected.

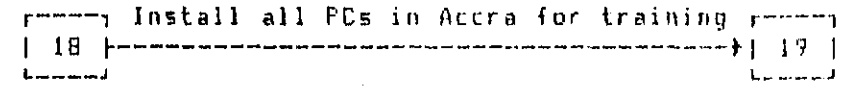


The questionnaire that was field- tested will be already in floppy diskettes (see activity 2-5 "Prepare questionnaire for field-test" above). Now the GLSS staff will use ESP and GRIDS to modify the design according to the field- test conclusions.

The new printouts will be used as masters to reproduce the final questionnaire.

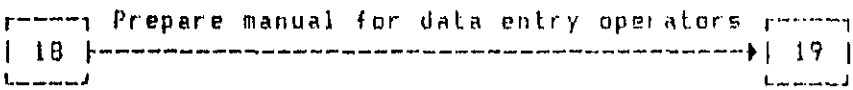


Only a few hundred community and price questionnaires will be needed. Probably the best way to reproduce these questionnaires in such small numbers is by photocopying and paginating directly at the GSS headquarters.

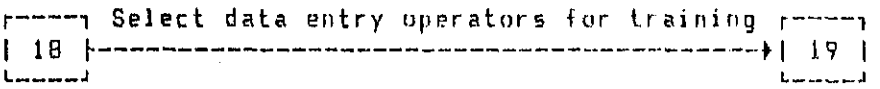


Only those PCs intended to be used by the GLSS staff were installed (see activity 4-7 "Install some PCs in Accra" above). Now the rest of the computers (about 10 of them) intended for data entry activities in the field, have to be installed temporarily in Accra, to train the data entry operators.

Suitable premises (with adequate power supply, air- conditioning and so forth) will have to be assigned to install all these machines together during the training.



The manual should be written by the GLSS staff responsible for data entry operations. An English translation of the data entry operators manual used in Côte d'Ivoire is available, and can be adapted easily to Ghana.

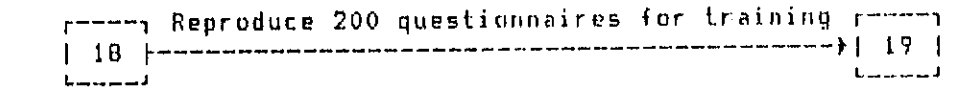


Fifteen to twenty candidates should be trained to select the ten data entry operators needed. Candidates don't need to have worked with computers before, but they should have some experience with keypunchers or other data entry machines. Good typists can also be considered, even if they have not worked at data entry.

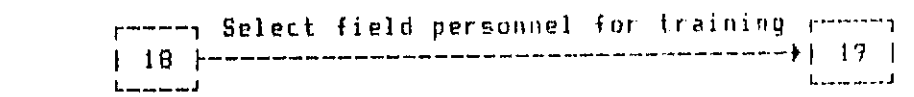
Candidates should be willing to move to another town if selected.

The final version of the data entry program will be prepared during a second mission to Ghana. This final program should reflect the final questionnaire, and it should be ready before the training of the data entry operators and field staff starts.

Ideally, the data entry program would be finalized by the GLSS programmers themselves, with just a minimum help from me. Afterward, they will be the only responsible to adapt it to new questionnaire modifications. They will also have to correct any remaining program bug that is detected during training or during the first weeks of field operations.



As the full 4,000 questionnaires needed for the first year will be printed at a print shop, and that can take quite long (see activity 18-20 "Printing 4,000 questionnaires" below), it is important to reproduce much faster a small number of questionnaires for training. Probably the fastest way to do it is by photocopying and paginating at GSS directly.



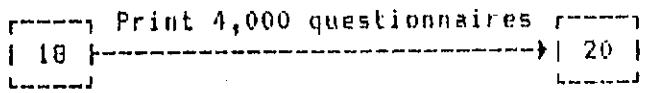
The survey will need 10 supervisors, 20 interviewers and 10 anthropometrists. It is recommended to select about 50 % more to be trained. Screening criteria at this stage refer to education and general competence, as well as to willingness to accept the hard field conditions. Supervisors should ideally have prior experience with surveys and specific education in statistics. Anthropometrists do not necessarily need prior training in health or nutrition.

At least the following three manuals need to be prepared: (1) An interviewer's manual, (2) a supervisor's manual, and (3) an anthropometrist's manual. The manuals are supposed to:

- provide concepts and definitions,
- define field procedures, and
- ensure uniform criteria on those parts of the questionnaire that are not self- explanatory.

The manuals must be prepared by the GLSS staff in charge of survey management. English translations of the Côte d'Ivoire manuals are available and can be used as guidelines. Editing of the manuals can be easier if the personal computers are used as word processors (with ESP, for instance).

Reproduction of the manuals can be done through photocopying at GSS headquarters. It is recommended to reproduce at least a hundred of each, because apart from its obvious use as support for field operations, manuals will be a precious tool for those in charge of analyzing the collected data later.



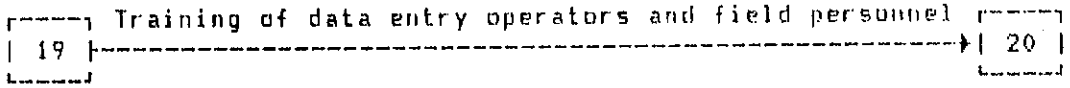
Although 3,200 households will be interviewed, at least 4,000 questionnaires must be printed for the first year. Extra questionnaires are needed to keep adequate stocks at Accra and at each Regional Office. The teams will also need extra questionnaires to use them as additional pages for very large households.

Many more questionnaires will have to be distributed also those involved in the analysis of the survey.

The print shop should be given good quality masters, in large size, as produced by the personal computers with ESP and GRIDS, as well as a few models of the reduced questionnaire, as it should look afterward.

Experience shows that mass printing of the LSMS questionnaire is an extremely delicate activity, that must be monitored very closely. Somebody from GLSS should be in charge of checking every step of the printing process (reduction, photo composition, offset masters, reproduction, pagination, binding, etc.) Proper reproduction of the individual sections of the first round is essential to avoid interviewer mistakes (like shifting lines between pages).

It is never a good idea to put too much pressure on a print shop to produce things fast, and this is no exception. Arrangements should be done well in advance, and at least four weeks should be allowed for printing.

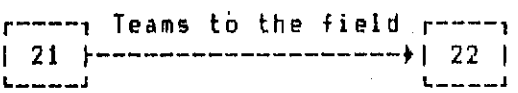


Training of data entry operators and field personnel takes place during four weeks, and consists of theoretical classes and practical field work in urban and rural households. A rough schedule is as follows:

Week	Data entry operators	Field personnel
1	Introduction to the survey. Introduction to personal computers and printers. Unpacking the computer. Diskette management.	Introduction to the survey. General survey procedures. The questionnaire. Definition of a household. Theory of the sections of round 1.
2	The data entry program. Presentation of all the data entry screens of round 1.	Field practice of round 1. (each candidate must perform at least two observed interviews, both in urban and rural areas).
3	Practice of round 1. (the candidates will enter the data from all the round 1 interviews performed the previous week).	The correction of errors detected by the data entry program for round 1. Theory of the sections of round 2
4	Presentation of all the data entry screens of round 2. Practice of round 2 (the candidates will enter the data from most of the round 2 interviews performed earlier in the week). Packing the computer.	Field practice of round 2. (each candidate must perform at least two observed interviews, both in urban and rural areas).

Ideally, many of the supervisors may have been selected already (they may have even participated in the field personnel training). If more supervisors are still needed, they can be selected among the best candidates. The best ten operators, ten anthropometrists and twenty interviewers will have to be hired also at the end of the training.

It is recommended to keep contact in some way with a few more staff than is actually needed, in case it is necessary to replace some of the original team later.



Training of data entry operators must include the packing and unpacking of the machines, because they will be supposed to transport their computers to each Regional Office themselves.

11 , 0A
22 , 0B
31 , 0C
41 , 1A
51 , 1B
61 , 1C