



16. Preparation of the survey budget

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Conducting a national health examination survey (HES) requires resources, which include personnel costs and materials as well as funds for travel, accommodation, rent, transport of materials, etc. The type and amount of resources needed depends strongly on the number of persons to be examined, the measurements to be done and the setting of the surveys. The preparation of the budget has to include the entire survey process (see Part A, Chapter 1 of the EHES Manual) to ensure adequate resources for the planning and preparation, fieldwork as well as for the data analysis and reporting.

This chapter will provide guidelines for estimating the costs of the different phases of a national HES. It should be noted that these are just guidelines and have to be adjusted for the local situation. An Excel template (see details at the end of this Chapter), which may assist in preparation of the national HES budget, is also provided.

16.1 Purpose of the survey budget

The survey budget gives an estimate of the amount of money needed to carry out the planned survey components. With a well prepared survey budget, the work can be carried out without major surprises in the actual costs. The budget can also be used in discussions with the collaborators when possibilities to include additional measurements are negotiated. Adding a new measurement to the survey protocol will increase the total survey cost more than just the required equipment, through longer examination times per person which affects the costs of survey personnel and survey site, and also through training, data management as well as handling, quality control and reporting costs.

The funding available for the survey is always limited, and the survey budget has to be adjusted to the available funds. This may mean limiting the number of included measurements or the number of persons to be examined from what was initially planned. Also the selection of the survey mode has to be considered in light of the funding available.

16.2 Components of the survey budget

From the national HES, 12 stages, which affect the survey budget can be identified:

1. Planning and preparation
2. Coordination
3. Training of personnel
4. Dissemination (PR-activities)
5. Piloting
6. Sampling
7. Recruitment of participants
8. Field work of the full-size HES
9. Laboratory analysis and sample storage
10. Data entry and cleaning
11. Quality assurance
12. Analysis and reporting

When the measurements to be included in the national HES have been selected and the survey setting has been decided, the time needed to examine one survey participant should be estimated. For example, let us assume a survey setting where the participants come to the fixed examination site and we measure height, weight, waist circumference, and blood pressure and draw blood samples for total and HDL cholesterol, and for fasting glucose measurements. Additional to that, the participants have to fill in the survey questionnaire at home, which is checked and completed at the examination site after the informed consent is explained to and signed by the participant. We can estimate that the checking of the questionnaire and obtaining informed consent will take 15 minutes, anthropometric measurements 10 minutes, blood pressure measurement 15 minutes and drawing the blood sample 15 minutes. This sums up to 55 minutes per participant.

The total time required to measure the entire sample can be calculated by multiplying the time per participant with the sample size. In practice, the number of survey participants to be meas-

ured will be less than the sample size. This should balance out the time needed for setting out the examinations sites, mandatory breaks of the fieldwork staff, re-training, etc.

For example, if we have a sample of 4000 persons and the time to measure one participant is 55 minutes, a total time required to measure the entire sample is 220,000 minutes = 3667 hours. If each field work day lasts 8 hours, this would mean 459 days. Depending on the number of parallel field work teams, the length of the field work period can be calculated. If we have 4 field work teams, the field work would take 115 days and in case where the field work is conducted only during the working days from Monday to Friday, this would mean that the field work lasts 23 weeks. All this assumes that participants are examined at the fixed examination site one after other, without any overlap and without time needed for traveling (as in case of home visits). If the examinations can be organized with a field work team so that while one member of the team is examining one participant, the other one is at the same time examining the other one, i.e. there is overlap, the needed examination time decreases.

16.2.1 Planning and preparations

The planning process is described in Part A, Chapter 1 of the EHES Manual. The main resource needed for the planning and preparation stage is personnel. The expertise of different professionals is needed for the planning. Each planning and preparation team should include or consult at least following experts:

- Project leader, who has the main responsibility of the survey.
- Survey coordinator, who will organize the practicalities and will monitor the progress of the work.
- Senior researchers, who will provide epidemiological and public health perspective to the selection of the measurements and to the preparation of the survey questionnaires and manuals.
- IT expert, who will plan and prepare the IT infrastructure of the survey.
- Survey statistician, who will be consulted on sampling and analysis of the results.
- Press officer, who will be consulted on promotion of the survey as well as on dissemination of the results.
- Experts on the measurements, who will provide information on practical points of each measurement included in the survey.

- Laboratory experts, who will plan the blood sampling, sample processing, storage, transport and analysis.
- Expert on legal and ethical issues, who will be consulted in the questions relating to the data confidentiality, and ethical issues. This also includes obtaining the ethical approval for the survey, informed consent, etc.

There may also be need for a person with special knowledge on survey logistics. Survey logistics, scheduling of the examinations, and transfer of personnel and materials can have a major impact on the survey budget. In some countries, translation of the survey questionnaires, etc. to different languages may be needed.

16.2.2 Coordination

The coordination activities of the survey are described in Part A, Chapter 1 of the EHES Manual. The main resource needed for the coordination is the personnel but also some basic equipment and other resources are needed.

For the personnel, at least following is needed:

- Project leader, usually a senior researcher, who has the main responsibility for the survey.
- Survey coordinator, who will organize the practicalities and will monitor the progress of the work.
- Fieldwork supervisor, who will take care of the personnel management.

Often also an assistant is needed to assist with various practicalities, like recruitment of survey personnel, ordering the equipment and materials, etc.

The coordination team needs at least computers with internet connection, telephones/mobile phones, printers, software licenses, and office materials. Also premises for the coordination office are needed, although they are often provided by the organizing institute. In many cases, the coordination team will also travel to the survey sites to promote the survey and to monitor the progress of the work. The travel and subsistence allowances need to be budgeted for this. Also some money has to be budgeted for the recruitment of field work personnel (newspaper advertisements, etc.).

16.2.3 Sampling

The definition of the sample size is described in Part A, Chapter 2 of the EHES Manual and the sampling process is described in Part

A, Chapter 3 of the EHES Manual. Depending on the local situation, the actual sampling can be done by a survey statistician hired to the survey team, or it can be bought as a service from a statistical institute or other sampling frame owner. In any case personnel and equipment are needed as well. Sampling has to be made for both the pilot survey and the full size survey.

Regardless of the way the actual sampling is done, at least following personnel is needed:

- Statistician to determine the adequate sample size, to sort out available sampling frame(s) and to design the sampling.
- Database manager to form a database where the sample information is stored.

Computers, and software licenses to establish a database for the sample are needed. Often the survey database is not established on a PC but on a server of the institute organizing the survey. Depending on the institute, the use of server space and database platforms may or may not cost separately for the projects.

16.2.4 Training

The training programme is described in Part A, Chapter 15 of the EHES Manual. Salaries and travel costs for the trainers and the field work staff to be trained, equipment and some other costs like preparation of the training materials have to be budgeted.

As trainers, at least following expertise is needed:

- Trainers for each measurement included in the survey. Depending on the qualifications of the trainers, one person can train the measurement protocols for several measurements or each measurement may need to be trained by different persons.
- IT-support and/or data management person(s) to train how to use the IT programmes in the field work and how the data management is organized.
- Press officer to tell about the promotion activities for the survey.
- Statistician to tell about the sample selection as participants on the field may ask from the field work personnel how just they got selected to this survey.
- Legal and ethical expert to explain the importance of data confidentiality and how to obtain the informed consent.

Equipment needed for the training depends on the included measurements (Part A, Chapter 5 of the EHES Manual). A full set of equipment for each included measurement needs to be available during the training. A list of the required equipment for each recommended core measurement is given in Part B, Chapter 2 of the EHES Manual. It is good to provide each trainee with a folder, which includes training material together with the local survey manual.

In addition to the personnel and equipment, also premises for the training are needed. For the field work staff to be trained and for the trainers, travel expenses and subsistence may also have to be paid.

16.2.5 Dissemination of information

The dissemination activities are described in Part A, Chapter 14 and Part C, Chapter 7 of the EHES Manual. Dissemination of the national HES includes the promotion of the survey before and during the field work as well as the dissemination of the survey results to the survey participants, various stakeholders, general public and the scientific community. The resources needed depends on the dissemination strategy of the specific survey, but some personnel resources and other costs should always be budgeted.

Regardless of the dissemination strategy, at least a press officer is needed to plan and supervise the national dissemination strategy. There may also be need for a graphical designer to prepare promotional material for the survey. Often this service is bought from a service provider.

Depending on the planned promotion activities, there may be printing costs of promotional leaflets, advertisement costs for newspapers, radio and TV, and costs of press conferences and other promotion events. Costs from press conferences and promotion events may include payments to the publicly known persons who come to promote the survey, travel and subsistence costs, refreshments, etc.

16.2.6 Piloting

The piloting process is described in Part A, Chapter 11 of the EHES Manual. This requires both personnel resources, equipment and other resources.

For the personnel resources, at least following is needed:

- Full field work teams are needed to conduct examinations of the pilot sample.
- IT support to assist with the computer programs in use on the field.
- Laboratory personnel to process, transfer and storage of the blood samples and to carry out the laboratory analysis of the collected samples.
- Data manager to handle the incoming data.
- Statistician to assess and analyze the pilot survey data.

Examination equipment have been obtained for the training but additional sets may be needed for the pilot phase.

Other costs that may occur during the pilot are the printing costs of the invitation letters, phone bills, rents of the examination sites, travel costs and subsistence of the field work and coordination personnel and transportation of the material to and from the field. Additional costs for the pilot phase come from the evaluation of the success of the pilot and from possible needs to change the survey protocol, to correct the computer programs, and to re-train the field work personnel.

16.2.7 Recruitment of participants for the full-size HES

The recruitment process and ways to increase participation rate are described in Part A, Chapter 13 of the EHES Manual. The used recruitment strategies are survey specific and need to be adjusted for the national situation.

For the recruitment of participants, at least following personnel is needed:

- Assistant, who will prepare the invitation letters and mail them out or in case the first or re-contact is through telephone, personnel who make the required phone calls.
- A designated person, who is named as a contact person and can provide more information about the survey when ever any person selected to the survey requires that.
- Data manager or assistant, who will make sure that the status of the recruitment and contacts is also recorded to the survey database.

Computers and software licenses are needed to prepare invitations. It is highly recommended to establish a toll-free telephone number to which survey participants can call to change their examination times or ask additional questions. If a survey web site with for example web-based appointment scheduling system is established, personnel, equipment, and other costs relating to that have to be budgeted.

16.2.8 Field work for the full-size HES

All participants of the survey will be examined during the field work. The selected survey setting (Part A, Chapter 7 of the EHES Manual) will have a marked effect on budget. If questionnaires are filled in during the interview and are not self administered (Part A, Chapter 8 of the EHES Manual), the cost of interviewers has to be included to the budget. Also in case where the examinations are done at the participant's home, the travel expenses for the field work staff have to be adjusted for this setting. It is good to remember that the coordination goes through out the survey process and is an essential part of the field work.

For the field work, at least the following personnel is needed:

- Full field work teams to carry out the measurements (Part A, Chapter 9, and Part B, Chapter 2 of the EHES Manual).
- IT support to assist in the use of computer programs used in the field work (Part A, Chapter 12, and Part B, Chapter 3 of the EHES Manual).
- Data manager to handle the incoming data (Part A, Chapter 12 of the EHES Manual).

There may also be need to have a medical doctor on call for consultation.

Most of the needed equipment (Part B, Chapter 2 of the EHES Manual) have already been obtained during the training and pilot phase but additional sets of equipment may be needed for the field work teams.

Additional to the personnel and equipment, at least costs from transport of the materials to and from the field examination site, transport of the personnel, accommodation and subsistence of the personnel during the field work, storage of the material in the field, rents of the examination sites, and data transfer, phone and internet connection have to be included in the budget, depending on the survey setting. The cost of the feedback to the participants about their results (e.g. letters with laboratory results) has to budgeted as well.

16.2.9 Laboratory analysis and sample storage for the full-size HES

The issues related to the laboratory analysis and sample storage are described in Part A, Chapter 10 of the EHES Manual. Decisions on what is analyzed immediately and how much of the samples are stored for the future analysis effect the budget.

For the laboratory analysis, at least the following personnel is needed:

- Laboratory personnel with specific qualifications to handle the analysis.
- Data manager to handle the incoming data from the laboratory analysis.

A medical doctor should also be available for consultation if abnormal results are discovered.

Assuming that laboratory facilities are provided by the organizing institute, the following laboratory consumables need to be budgeted: aliquot tubes, pipettes, storage track and reagents. If the laboratory analysis is bought from the laboratory, these consumables should be part to the contract prize.

For the long time storage, the specific tubes which endure -70°C , storage boxes and deep freezers of -70°C are needed. For the deep freezers there has to be a security system to ensure that the samples do not melt during the power breaks and which will alarm if freezers get broken. Also log book of the stored samples is needed and has to be established if this is not already used in the laboratory.

16.2.10 Data entry and cleaning

The data management issues relating to the field work are described in Part B, Chapter 3 of the EHES Manual. The collected data have to be entered to the database and checked for completeness and correctness.

For data entry and cleaning, at least following personnel is needed:

- Data manager to maintain and update the survey database.
- Data entry persons in case data is entered manually.

- Statistician to work on data checking and cleaning.

Also transferring data forms to a data entry company and the data from there to the database will create costs. In case data forms are scanned, the scanning costs have to be included in the budget.

If computers and software licenses and server space needed for the maintenance of the database is not already budgeted during the planning phase, it should be included in budget here.

16.2.11 Quality control

The quality assurance of the survey process is described in Part A, Chapter 11 and the quality control of the data in Part C, Chapter 4 of the EHES Manual.

For quality control, at least following personnel is needed:

- Senior researcher/epidemiologist who know the survey protocol well and can detect deviations from it. Number and specific qualifications depend on the contents of the specific survey.
- Data manager who can detect possible systematic errors in the data already when they are entered to the database.
- Statistician to do basic checking of the data entered to the database.
- Laboratory personnel to perform both internal and external quality control of the laboratory analysis, and costs for taking part in the laboratory standardization program.

Equipment needed for the quality control of the measurements are specified together with the measurement procedures in Part B of this manual. In addition to these, computers and software are needed. An important part of the quality control is observing the work. There may be need to budget some travel and subsistence costs for the personnel conducting the quality control during the field work.

There may also be costs of the external quality control, such as for laboratory measurements.

16.2.12 Analysis and reporting

Issues relating to the analysis of the survey data and reporting are described in Part C, Chapters 5 and 6 of the EHES Manual.

For the data analysis and reporting, at least the following personnel is needed:

- Data manager to maintain and share the survey data.
- Statistician to conduct the statistical analysis.
- Researchers to specify the research questions to be analyzed from the data and to interpret and report the results.

Additional to the personnel, also computers and software licenses are needed. In case the basic results are published in a form of book, the layout and printing costs need to be budgeted. Often results are also published on the web and a web manager may be needed to prepare the reports for the web.

16.3 Template for budget calculations

There is an Excel template at the EHES Web site under EHES Reference Centre Tools (<http://www.ehes.info/rc/tools/tools.htm>), which can be used while preparing the survey budget. The template is only a helping tool and each component has to be evaluated in the national situation. Instructions for using the Excel template are given in the first worksheet of the Excel template. In case of any questions or problems in using this template, please contact the EHES RC, Hanna Tolonen.

