

Data Collection in Two Phase and Multi Centre Health Survey

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Introduction

National Public Health Institute (NPHI), Social Insurance Institute (SII), and Statistics Finland (SF) are undertaking a large-scale health survey in Finland. The major aim of the survey is to collect information about the health and functional ability, and about the need for care, rehabilitation and help. Additional aims are to find out the change of populations health status, functional ability and health needs; to estimate the future trends of health and need for services and social security; to find out cross-sectional associations between living conditions and living habits and health; and also to develop the health survey methods. An ultimate goal is to estimate what will be the use of health services and medicines, and the need for care, help and rehabilitation in the future.

The survey is composed of two consecutive phases. The first phase (autumn, 2000) will be a face-to-face health interview carried out by the interviewers of SF. The second phase will be an extensive health examination. Specialists having medical training will carry out the health examination in five similar mobile clinics. Clinics will move several times during the second phase in order to keep the distances reasonable for the examinees. Altogether, the clinics stop at 80 sites and the duration of a stay varies from two days to two weeks. Accordingly, each clinic moves more than fifteen times.

The primary reason to have two separate phases was to split the respondent burden in two smaller pieces. The health interview takes 60 minutes in the average and the health examination about three hours. Additionally, it is hoped that the use of professional interviewers in the first phase would reduce non-response. Interviewers also agree with the respondent the time when he or she goes to the mobile clinic for the health examination. It is important part of the survey, because the clinics stay only a few days on one site.

Contents of the survey

The purpose of the survey is to collect a comprehensive set of information concerning the health and living conditions of the adult population living in Finland. Individual based stratified two-stage cluster sample of 10 000 people will be drawn from the Population Registry. Municipalities or clusters of municipalities are the first stage sampling units.

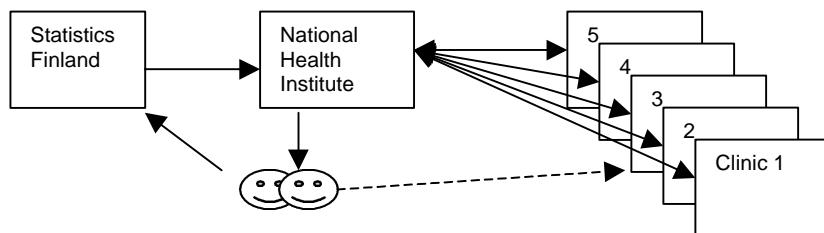
The first interview at respondent's home is focussed mainly on living conditions, working conditions and living habits. Also, some general aspects of health, like experienced symptoms, and use of health services and medicines will be covered.

In the clinical health examinations, respondent's risk and protective factors, as well as symptoms and signs will be explored in an interview. Functional and working ability will be determined by specific tests accompanied by an interview. The major diseases and disorders, whose prevalence will be found, are cardio-vascular, respiratory, musculoskeletal, mental health, and oral health and dental diseases. Mental health examination is a psychiatric interview. Specific equipment are needed in the examinations of the other diseases and disorders (e.g. EKG, spirometer, dental x-ray).

Data collection and data flow

The first phase is planned to last about six months and data collection will be carried out by the standard CAPI system of SF. However, the second phase begins soon after the beginning the first phase. Time difference between the interview and the health examination will be approximately two or three weeks. Consequently, the two data collection phases overlap and some parts of the health interview will be needed as background information in the health examination. Therefore, the interview data have to be transferred the mobile clinics soon after the interview.

At SF, the Blaise forms will be assembled in a file or files. The files will be delivered to the server at NPHI, from where they will be distributed to mobile clinics via modems and mobile phones. Mobile clinics will receive also the appointments interviewers have agreed with the respondents.



The results of the completed examinations will be sent to NPHI only a few days after the examinations, without any further processing. Data processing and analysis mainly takes place at NPHI. Also, a standard health report will be printed for each examinee, a physician looks into it, and finally the report will be sent to the examinee.

Data collection in mobile clinics

In every clinic, specialists like physicians, dentists, psychologists, and nurses will carry out several different interviews, measurements and examinations. Each clinic will have altogether 12 different measurement or interview rooms. Most of the data will be entered by Blaise instruments either directly or typing in the results from the measurement devices. Therefore, in all examination rooms at a clinic will be a workstation that has all the necessary Blaise questionnaires, and access to database composed of sample data and parts of the health interview. For some measurements, e.g. functional capacity, there will be two similar examination rooms enabling parallel examinations.

The hardware for the clinics is designed so that moving the installation from one place to another is easy. Therefore, all workstations will be similar laptops, which are connected with a wireless network to the local server. Also the servers are laptops. Each laptop needs only a PCIMCI card by which it can be connected to network. Because of this installation, the workstations may be moved freely in the range of some 50 meters from the server, i.e. in a circle whose diameter is 100 meters (nearly 8000 m²). Each server has a modem connected to a mobile phone for communication with the server at NPHI central office in Helsinki. The operating system will be Windows NT 4.0 WS in workstations and Windows NT 4.0 Server in servers.

Identification

The health examination sets new demands for the identification of subject data. For instance, bar code labels are needed for the blood and urine samples. In the clinic each respondent needs some 30 identification labels to be attached on sample tubes and on paper forms. The problem is that it is not known early enough in which of the five moving clinics he or she will be examined. Therefore, the labels cannot be printed for him or her in advance.

The standard identification key of SF will be used in the health interview at respondent's home. However, using the original identification keys for the identification in the health examination had been difficult to arrange and error prone in any case. Therefore, each clinic will have several sheets of labels with new identification keys. Before the opening interview at the mobile clinic, respondent gets the first available identification. In practice that is a sheet with the labels. The new and the original identifications will be linked together in the opening interview, and only the new identification key will be used later.

Files structure

Most the data will be stored directly or indirectly by Blaise instruments. That is, there will be no paper forms for most of the measurements. Therefore the collected data have to be secured in many ways, including backup copies, encryption and also fastening computers on tables. The servers will be backed up (continuously) in Iomega ZIP stations.

Some common files like the sample file and some part of the health interview, will be stored in the server so that they may accessed from all workstations. Other data files will be stored primarily in the local workstations. A few times a day, the local (Blaise) files will be appended to the main data files in the servers, however. Every time the clinic moves from one site to another, the data files will be renamed and copied NPHI main server. At the next site, data will be stored in a new (empty) file.

Technically it was possible to have all data files on the server only. It is not known yet what will be the local circumstances and therefore, how reliable the network will be. Therefore, at least in the pilots files will be stored locally on the workstations.

Conclusions

Computer assisted data collection is commonplace in professional survey organizations but the possibilities computers bring in the data collection are new for specialists in many areas. For instance, health surveys have a very long history using PAPI. However, health surveys are not repeated very often and therefore, the recent development in data collection methods is not well known among the health survey professionals. Methodologically SF's impact, apart from the sampling expertise, has been to introduce computer assisted data collection methods in a health survey. Partly the ease of authoring made it possible to use Blaise (and CAI) for the data collection.

CAI introduces some new features, like the checking mechanism and the possibility to apply computer assisted coding, which reduce substantially the need of data editing. Previously, data editing after the actual data collection has been a very time consuming task in health surveys. Now, data files are ready for analysis much faster. However, it has been difficult to convince the researchers of how much in advance the data entry instruments should be ready.

In theory, data entry had been possible also with other types of software, e.g. database systems, but probably the designing process of data entry forms had become much more laborious. Though the other system may have made easier the design of the other parts of the information system. A clinical health examination involves several other aspects than only interviews, which should be incorporated in the data collection plan, which are more difficult to accomplish by Blaise system.

Only the first, fairly small pilot (without telecommunications) has been undertaken up to this point. The second, more comprehensive pilot study will take place in May, 2000. As the first experience, the computer assisted data collection was considered successful. The specialists who did the data entry found it very convenient, and at least as good a method as using paper forms, in any case. Some of the comments were praising.