

DESIGN AND PROCEDURES IN THE HAWAII HEALTH SURVEILLANCE PROGRAM

Charles G. Bennett and Paul T. Bruyere
Hawaii State Department of Health

The Hawaii Health Surveillance Program, begun in May 1964, is a continuing monthly health survey of the resident non-institutional population of the Island of Oahu, on which are located the City and County of Honolulu. The Bureau of the Census has designated the Island a metropolitan statistical area. It contains about 80 per cent of the population of the State.

During a three year period the program is being supported in part by the Bureau of State Services (Community Health) of the Public Health Service as a demonstration project. Its objectives are "to institute, develop and demonstrate the feasibility and utility of continuing health surveillance by means of interviews conducted in small random samples of households, independently selected each month; to provide sensitive, up-to-date measures of morbidity, population characteristics, health attitudes and the degree of health information in the community, and other knowledge useful in health planning, evaluation and research." After the demonstration period, the program may continue on a permanent basis using State funds entirely. Whether it so continues, obviously, will depend to a large degree upon results obtained during the present demonstration period.

The program is largely an outgrowth of the federal Health Interview Survey which was extended on an amplified scale to Oahu for one year during 1958 and 1959. Our questionnaire, instructions to interviewers, concepts and procedures, to a large extent, are based on those of the National Health Survey and we have received a great deal of constructive advice from consultants of that agency.

Sampling

The main sampling frame is a list of electric light meters. One power company serves all of the Island and the number of families without electricity is negligible. The few we have identified can be sampled separately. The company maintains a computer tape of all addresses to which bills are sent. We use this on a 1401 computer to draw semi-annual samples from which monthly subsamples are drawn. The semi-annual sample is in the form of a listing of every fiftieth meter billing address after a random start. From this we select a similar systematic subsample monthly of about 230 addresses, which constitutes a ratio of 1 address to about 575 households in the population. On an annual basis this ratio becomes about 1 to 48.

Some apartment buildings, housing developments and the like do not have individual household meters and all of these "demand accounts" are shown separately on the listing from the tapes. In such cases we ascertain the number of dwelling units in each building or account and, in effect, add this number to the sampling frame.

If one or more sample addresses fall in one of these buildings, interviewers are given instructions indicating which households to interview. For example, if the sample includes the 10th living unit, the interviewer ascertains which one that is from a list of numbered units or by actual counting of the units inside the building or housing area.

An item on the face sheet of our questionnaire asks, in effect, whether more than one household receives electricity through a single meter. This question is asked because occasionally what the electric company designates as a household may include more than one, according to survey definition. In case the interviewer finds more than one household using a meter, where this was not previously known, instructions have been prepared on how to select the one to be interviewed. If there are no more than 2 or 3, coin tossing suffices.

Interviewers

Three full-time employees of the project do some of the interviewing together with office work such as coding. The rest of the interviewing is accomplished by 50 public health nurses stationed in 5 districts on Oahu. By agreement the nurses give an average of at least two hours each per month to the work. During the first year they averaged 1.6 completed questionnaires per month as compared with 3 estimated in the initial planning. This outcome has been due chiefly to the large number of households where no one has been found at home during working hours. (More than 40% of the females aged 17 and over on Oahu work outside the home.) When no acceptable respondent is at home on a second or occasionally a third visit, the nurse returns the uncompleted questionnaire to the statistics office for an evening call. As a result, about 47 percent of the blank questionnaires sent to the nurses for use at designated sample addresses are returned uncompleted, and the nurses submitted only about 40% of all questionnaires completed during the first year of interviewing.

Partly in an attempt to increase the proportion of interviews by nurses, we have enclosed a stamped return postal card with the advance letter from the Director of Health sent to each sample address. This card asks when the interviewer will be likely to find an adult member of the household at home. Only about one third of these cards are returned; we suspect that many of them reach the waste paper basket as advertising matter that is not read. Nevertheless we consider it worthwhile to continue sending them, for those which are returned specifying a time to call save the interviewers time, and when an evening hour is indicated the corresponding sample address need not be sent to the nurses.

We are still seeking some means whereby the

public health nurses will do all or most of the interviewing, including at least some evening and weekend calls. Perhaps the only way to accomplish this will be to prevail upon the legislature to augment the nursing staff.

We have made some tabulations which we found of interest, comparing the data secured by the nurses with those of the other interviewers. The results indicated, as might have been expected, that the nurses are interviewing, for the most part, larger and younger households. As indicated above, they obtain data only from those households with a suitable respondent at home during the regular working hours. These are the households most likely to include children with the mother at home to take care of them. Predictably also, the nurses found higher acute condition rates, while the non-nurses encountered higher chronic condition rates.

This situation was reversed, however, for one acute condition labeled "the virus, not otherwise specified." Here it was noted that the rate obtained by the non-nurses was 20 times higher than the nurses' rate. Apparently the latter were less willing to accept this ill-defined term as a condition and made more searching inquiry as to what was wrong. Upon being apprised of the situation, the other interviewers, for better or worse, practically stopped making any entries for "the virus."

Questionnaire Content

Our basic questionnaire is in 4 parts. Part I relates to demographic characteristics; Part II consists of health probe questions to find out the kinds of morbidity and hospitalizations occurring; Part III goes into detail about the morbidity conditions reported in Part II; and Part IV secures data on the hospitalizations reported in Part II. Almost every item in this basic questionnaire has been tested in the National Health Survey.

Supplementary questionnaires are to be added from time to time for periods of a year or less. These will concern topics which various units of the Health Department may wish to have investigated. At present, data on the use of insecticides in the home are being obtained. Other supplements on health attitudes and home accidents are in the process of development. At one time we had hoped to formulate a satisfactory short supplement concerning mental health problems, but our attempt in this direction has not turned out well.

Recall Period

The interviewer inquires about acute conditions occurring during the full calendar month previous to the month of interview. Our basis for this choice was that a complete calendar month provides the respondent with an excellent frame of reference for recall; the sample is increased in terms of the number of conditions or events reported; and administrative control is somewhat simpler on a calendar month basis. In order to accomplish this, however, we feel it is

important to complete the interviewing promptly at each month's end. To date we have been able to complete only about 65 percent of the interviews in the first week of the following month; we are making every effort we can think of to increase this figure.

In an effort to evaluate the calendar month against the two week period used in the National Health Interview Survey we have included the following question concerning each acute illness mentioned: "Were you sick from (this condition) before the 15th of the month or later in the month?" For injuries the wording is slightly different: "Did (this injury) happen before the 15th of the month or later in the month?" Tabulation of these questions over a 7 month period showed that 40% of the conditions existed before the 15th of the month, 43% later, and 18% both before the 15th and after. On the hypothesis of equal recall over the whole month, the before and after percentages should be about the same, and in fact the difference is well within sampling error. Nevertheless we intend further study using more cases and breaking them down by type of condition and other factors.

Chronic conditions are reported on the basis of 12 months recall. For the most part they are elicited by means of a checklist. The respondent is asked to check "yes" or "no" after each item in a prepared list. In the federal survey conducted on Oahu in 1958 - 1959, the interviewers simply read off the list of conditions to the respondent. Dr. Philip Lawrence, chief of the Division of Health Interview Statistics, National Center for Health Statistics, advised us that his office had subsequently found the checklist approach more effective. Perhaps as a result, we find the overall chronic condition rate in the current survey about 8 percent higher than in the previous federal survey.

Supplementary Mortality Survey

A major segment of the annual statistical reports from this project will be devoted to hospitalization in short-stay hospitals. This is expected to be of considerable value in current local efforts toward planning for future hospital and related health facilities. In order to make such statistics more complete, a subsidiary survey is being carried on each month concerning hospitalization of deceased persons during their last year of life. This is essential because interviews cover only the experience of persons living at the time. Obviously, a considerable number of individuals, especially at the older ages, receive extensive hospital services during the last months of life.

Information is being secured from hospitals and families of the deceased on a ten percent sample of deaths occurring each month. A little time is saved by using the same ten percent sample which is sent to the National Division of Vital Statistics for its current mortality index. As in other aspects of our project, procedures used for securing this supplementary mortality information are similar to those used in connection with the National Health Interview survey.

All hospitals are cooperating and about 90% of the families queried send in the desired information.

Data Processing

Mimeographed code sheets have been made up to record data for person cards, condition cards and hospitalization cards. Items concerning the household as a unit, such as its size, are placed on the code sheet for the person card of the head of the household.

Code sheets for each acute or chronic condition and for each hospitalization that a person has had are stapled behind the person sheet. The card punch operator completes a person card and then automatically duplicates 40 columns of it on each condition and hospitalization card. Many individuals, of course, require only a person card, whereas others may have a dozen conditions and several hospitalizations.

We are using the Medical Coding Manual and short index developed by the National Health Survey. It is an adaptation of the International Classification of Diseases, Injuries and Causes of Death to the kind of data secured in interview type health surveys. Although we have experienced coders, thoroughly familiar with the International Classification, they have had to study and gain experience with this adaptation of it to use it easily and accurately.

Thus far we have run all tabulations on a rather slow speed counting sorter available in the health department. This has been especially convenient for short run monthly reports and for experimenting with various kinds of tabulations. For annual reports involving about 18,000 cards, the sorter alone will require too much time. Since a 1401 is available and we have funds to pay for its use we are developing suitable programs for the annual data.

Projected Uses of the Data

In a survey of this type which produces a numerically rather small sample, the most informative detailed reports can be prepared only with data from at least a year of interviewing. We have not had time to issue any reports as yet on a full year's work. Tabulations have been completed and a report is now being prepared on the demographic and health characteristics of persons in military households. Although this group constitutes better than 15 percent of Oahu's population, little is known about its composition and health. The forthcoming report on these subjects should be of interest to both civilian and military authorities and possibly to other areas having a large population of military families.

Some topics of other reports we are working on in addition to annual tables of incidence and prevalence of morbid conditions by age and sex, are these: respiratory conditions including asthma and hay fever; time lost from work due to illness by various population categories such as government and non-government employees; hospital statistics; income and morbidity; accidents; activity limitation due to chronic conditions; health characteristics of persons 65 and over; bed disability among various classes; and differences among ethnic groups in the incidence and prevalence of morbidity.

Because of the variety of ethnic groups living in Hawaii, the last mentioned topic is expected to provide stimulus toward further research studies. For example if one or two of the ethnic groups such as Japanese, Chinese, Filipino, Portuguese, Puerto Rican or Polynesian, appear more susceptible than others to some condition, follow-up studies can be made in an attempt to find reasons for the difference.

An important objective of the surveillance program is to produce up-to-date demographic data between decennial census years. Already, at their request, we have supplied some items to the State Department of Planning and Economic Development, including an age and sex breakdown of Oahu's population, the age and sex of persons in military households, distribution of family incomes and ethnic composition.

In 1967 we hope to obtain an appropriation from the Legislature with which to make this project a permanent operation. At that time we shall have a large body of data and its analyses in the form of various reports, to show that the program is producing; in addition, we expect to have convincing evidence that the data are actually being used in public health, medical and demographic work. To secure such evidence, we plan to request information from our mailing list on just how many of our data have been used. We are also, of course, keeping a tally of special requests for information, of which we have already received several dozen.

We realize that the health interview survey has many shortcomings which have been discussed at considerable length in the literature. Nevertheless, we believe that the data it produces may reflect with a considerable degree of accuracy that aspect of morbidity in a community which has had an economic or social impact upon the individuals and families concerned. In this day of extensive planning in public health and other areas, this type of survey may continue to provide essential data not usually available from any other source.