

VITAL and HEALTH STATISTICS
PROGRAMS AND COLLECTION PROCEDURES

Plan, Operation, and Response Results

of a Program of Children's Examinations

A description of the Health Examination Survey's second cycle, examinations of a probability sample of United States children 6-11 years of age.

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PREFACE

This report is primarily a description of one of the major programs of the National Center for Health Statistics. It is, therefore, most appropriately classified in Series 1. It is not, however, purely a program description since it includes the results of the execution of the program with respect to response. Thus it represents for the second cycle of the Health Examination Survey a combination of two reports related to the first cycle—Series 1, Number 4 (program description), and Series 11, Number 1 (response results).

The process of planning this program has been described in considerable detail in this report. This description is primarily a necessary foundation for understanding and use of the findings reports to be published later. It is hoped that it will serve also as an aid to others facing somewhat similar problems in planning examination surveys.

In the course of the description, acknowledgment is made of some of the assistance received

from individuals and groups within the Public Health Service and elsewhere. Space does not permit anything like full recognition of those who have participated. Mention should be made here, however, of the important role played by the U.S. Bureau of the Census. Under a contractual arrangement they have participated in the survey planning and sample design, selected the sample, conducted the initial household interviews, and carried out part of the data processing. The examination phase of the plan was worked out and generally supervised by Dr. Alice M. Waterhouse, then Medical Advisor to the National Center for Health Statistics, Dr. James E. Kelly and Dr. Lawrence E. Van Kirk, Jr., Dental Advisors to the Center and the Division of Health Examination Statistics, respectively, and Dr. Lois R. Chatham, Psychological Advisor to the Division. This report was prepared by Arthur J. McDowell.

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THIS REPORT IS a detailed description of the second program of the national Health Examination Survey. This survey involved selection and examination of a probability sample of the nation's noninstitutionalized children between the ages of 6 and 11 years. The examination focused particularly on factors related to growth and development. It included examination by a physician, a variety of tests, procedures, and measurements, examination by a dentist, and tests administered by a psychologist. The report describes the development of the survey plan, the sample design, the content of the examination, and the operation of the survey, including steps taken to combat measurement error. It also presents the response results of the survey.

The Health Examination Survey second cycle program succeeded in examining 96 percent of the 7,417 children selected for the sample. This very favorable response rate showed expected variations by population-density groups and some other variables; but the differences were slight. Thus, for example, the range of variation among the 40 locations visited was quite limited. The lowest response at any location was 90 percent, and at two locations 100 percent of the sample children were examined. The report discusses factors related to response rates.

PLAN, OPERATION, AND RESPONSE RESULTS OF A PROGRAM OF CHILDREN'S EXAMINATIONS

INTRODUCTION

The Health Examination Survey is carried out as one of the major programs of the National Center for Health Statistics. It is a part of the National Health Survey, authorized in 1956 by the 84th Congress as a continuing Public Health Service activity.

The National Health Survey consists of three different survey programs.¹ One of these, the Health Interview Survey, is primarily concerned with the impact of illness and disability upon people's lives and actions and the differentials observable in different population groups. It collects information from the people themselves by means of household interviews. A second, the Health Records Survey, actually is a family of record-linked surveys. It includes follow-back studies based on vital records, institutional surveys to establish sampling frames as well as to provide data, and surveys based on samples of hospital records. The third major program of the National Health Survey is the Health Examination Survey (HES).

The Health Examination Survey collects data by direct physical examinations and tests and measurements performed on the sample population studied. This is the best way to obtain definite diagnostic data on the prevalence of certain medically defined illnesses. It is the only way to obtain information on unrecognized and undiagnosed conditions—in some cases, even nonsymptomatic conditions. It is also the only way to obtain distributions of the population by a variety of physical, physiological, and psychological measurements. It provides these data for a known population and

simultaneously provides the demographic and socioeconomic data required for analysis.

Because the Health Examination Survey collects a wide range of kinds of data on each of the sample persons examined, it is possible to investigate many different interrelationships. In addition to exploring the obvious differentials in disease prevalence related to demographic or socioeconomic factors (age, sex, income, education, and the like), it is possible to relate one set of medical findings to another or to other kinds of data collected in the examination. Thus data on visual acuity can be related to school achievement, findings of an eye examination, scores on psychological tests, and other items. The possibility of studying interrelationships is not limited to those already known to exist. Suspected relationships can be investigated, and examination of the collected data may even reveal relationships hitherto unsuspected.

GENERAL PATTERN OF SUCCESSIVE HE'S PROGRAMS

The Organization by Cycles

The Health Examination Survey program is carried out as a series of separate programs, each one with a specific set of goals. These successive programs are referred to as "cycles." Each cycle is concerned with some specific segment of the total U.S. population and with certain specified aspects of the health of that subpopulation. Thus the first cycle obtained data on the prevalence of certain chronic diseases and on the distribution of various measurements and other

characteristics in a defined adult population. The second cycle concerns a different population, children between the ages of 6 and 11 years, and the examination focuses on factors related to growth and development. The third cycle covers a sample of youths between 12 and 17 years of age.

The first cycle began examinations in November 1959 and completed the last of the field work 3 years later, in 1962. The examination was designed to determine the prevalence of the several cardiovascular diseases, arthritis and rheumatism, and diabetes. Various measurement data were gathered, including visual and auditory acuity, blood pressures, electrocardiographic tracings, and numerous body measurements. A dentist examined teeth and mouths. The sample population was representative of the total civilian, noninstitutionalized U.S. population between the ages of 18 and 79 years inclusive. Reports already published from the first cycle include the program description,² various methodological reports,³⁻¹⁰ and a growing group of reports of findings.¹¹⁻³⁵

The Three-Level Operation Concept

The plan of operation which has developed for the Health Examination Survey involves what is referred to as three-level operation. This expression describes a pattern whereby in any given period the survey is operating simultaneously on three different levels—data collecting, cycle planning, and analysis of findings. At a particular time, for example, when the examinations are being carried out for Cycle II, the work of tabulation, analysis, and publication of findings from Cycle I is also proceeding. During that same period of time the planning and preparing for Cycle III is being worked on so that when all examinations are completed in Cycle II the process of examining in Cycle III can begin. There are a number of reasons for this three-level operation, but the principal one is to avoid complete dismantling of a field apparatus between examining phases of successive cycles.

Common Characteristics of Successive Cycles

In addition to the broad mission and general operating pattern which have been described, a number of basic characteristics are common to all the cycles of the Health Examination Survey. Some of these are strengths; others are limitations.

All HES programs make use of probability sampling. This is a *sine qua non* for a national health examination survey since the examination process obviously involves time, skill, and cost factors that preclude its use on any but a rather limited scale. Probability samples make possible generalizations concerning the population from which the sample is drawn with some knowledge of how reliable the generalizations are.

All the programs collect cross-sectional data on a national sample of the noninstitutionalized population. The numbers involved in the national sample permit some analysis by broad geographic region or by population-density groups or other major subgroups of the total sample, but they do not permit detailed geographic breakdown of the data. No information by State, for example, will be forthcoming from these programs. The data collected relate to a particular point in time; no longitudinal data are presently being collected through any followup of examined persons. The samples studied in each of the cycles are limited to the noninstitutional population.

The programs all represent a multidisciplinary approach to research. In each of them members of many different professions combine their efforts, including statisticians, physicians of various specialties, dentists, psychologists, nurses, educators, sociologists, and management specialists. The programs also involve interagency collaboration. The U.S. Bureau of the Census is a partner in many phases of the survey. Many other agencies advise and assist in various ways—Federal agencies such as the National Institutes of Health, the Office of Education, and the Children's Bureau, to name but a few, and agencies

outside the Government such as medical research centers, schools of public health, and survey research agencies.

A basic premise underlying all the programs of the National Center for Health Statistics is that findings should be made available to all interested persons as rapidly as possible. This is done primarily through the publication of reports prepared in a form usable by large numbers of consumers of health statistics and yet at the same time organized so that a medical research worker interested in particular problems can obtain relevant data by looking at a minimum of data in which he is not interested. The principal reports are published in the various *Vital and Health Statistics* series.

THE PLANNING PHASE OF CYCLE II

Guidelines at Outset

The foregoing description of the general pattern of successive cycles of the Health Examination Survey indicates some of the broad guidelines that were available at the outset of the planning phase of Cycle II. Thus it was clear early in 1961 that the second cycle would study a probability sample of a segment of the national population, would exclude institutionalized persons, and would collect cross-sectional data related to health which require direct examination, testing, and measuring of the individuals in the sample. The first step in establishing the basic guidelines specific to the plan for the second cycle was to add to these general guidelines the specific targets for Cycle II.

The determination of the broad targets for the second cycle, the population segment to be studied and the general objectives of the study, was made arbitrarily but only after widespread consultation with many users of the kinds of data which the Health Examination Survey is able to produce. One formally constituted body, which played an important part in the process, was the Advisory Committee to the Surgeon General on the National Health Survey. This was a broadly based group of experts who represented a wide range of interests in the health field. In addition advice was obtained from an advisory group composed of representatives of various agencies within the Depart-

ment of Health, Education, and Welfare and a like group of representatives of many other Federal Government departments. Apart from consulting with formally established groups, there were a considerable number of contacts with individuals prominent in the field of medical and health statistics throughout the country. A number of schools of public health, medical research centers, and like agencies were also contacted.

During the early stages of this consulting, the individuals contacted were asked to indicate the different kinds of studies which they felt were most needed and were appropriate to the method. They indicated their relative priorities for different kinds of studies, and these were considered along with other general guidelines to determine the broad targets.

Broad guidelines for the second cycle, in addition to those already discussed, included the following:

1. The data collection mechanism developed and proved through the first cycle will be used with appropriate modifications.
2. Experienced and qualified personnel in the field staff will be retained to the extent necessary to perform the data collection operation in Cycle II.
3. The total period of data collection for Cycle II will be between 2 and 3 years.
4. Certain cost factor limitations such as the budget loads projected for each of the fiscal years 1962 and 1963 will be observed.
5. The schedule developed will take account of climate and will provide a safety factor so that if the operation terminates prior to completion of all examinations, a smaller but still representative subsample will have been included.
6. The Bureau of the Census will collaborate in the sample design and selection work and will carry out the first phase of the field interviewing in the survey.
7. The detailed plans developed for the study will be tried out in at least one full-scale pilot project operation prior to initiating the data collection for the sample.

By mid-1961 a determination had been made that the second cycle program would involve the examination of a probability sample of children and that the focus would be primarily upon factors related to growth and development. The aim of the survey would be to collect considerable information on health characteristics and to obtain distributions of the population by various physical and physiological measurements.

Developing the Detailed Plan

Throughout the latter part of 1961 and early part of 1962 the work of planning the second cycle proceeded and intensified. The process of consulting with numerous interested individuals and agencies was continued, but now the inquiries were more specific. It having been determined to collect data on growth and development in children, such questions as these had to be answered: "What specific body measurements should be made and in what manner?" "How should visual acuity be determined?" "What kind of information should be collected in the medical history?"

During the process of developing the more detailed plan, it became necessary to modify the original concept in various ways. At the beginning it had been tentatively decided that the age group to be studied in Cycle II would be persons between the ages of 6 and 17 years inclusive. As the detailed planning proceeded, however, it became apparent that the differences between persons in different age segments of this population group were so great as to require separate programs. Such matters as feasibility of self-administered tests, type of motivational approaches to be used, sizes of some of the supplies and equipment, and adverse effect on participation on the part of teenagers in a program that seemed to be a "children's" examination—all these and other considerations led to a decision to limit the age range. It was decided to redefine the Cycle II target population as children between the ages of 6 and 11 years inclusive and to follow this program with a third cycle which would have youth at ages 12 to 17 years inclusive as its target population.

The development of the sample design was, of course, an important aspect of the planning process. It was carried out concurrently with the determination of the content of the examination

and the detailing of the operating procedures. These are discussed later in this report in some detail. Here it may be noted that the specific universe to be sampled was defined as consisting of all children who were

1. Between the ages of 6 and 11 years inclusive regardless of whether they attended school.
2. Residents of the United States (including Alaska and Hawaii).
3. Not confined to an institution.
4. Not residing upon any of the reservation lands set aside for use of American Indians.

The determination as to appropriate status with respect to conditions 1, 2, and 3 made on *the date of the household interview* (the first contact in which the necessary information was obtained) was to govern in establishing sample versus non-sample status.

While the process of developing the detailed plan for the second cycle resulted in some delimitation of the original concept (as with the age range), it also produced some expanding of the goal of the examination. It was recognized from the beginning that the lowness of prevalence rates of chronic disease in the age group considered meant that the focus would have to be on measurements and on factors related to growth and development. As the plan focused more sharply on the most important factors to be studied, it became apparent that in this age group it would be essential to collect some data relevant to the intellectual growth and development of the children. It appeared desirable also to obtain some sort of measure of factors related to the development of personality.

The decision to include collection of some psychometric data in the second cycle plan involved the addition of yet another discipline to the already multidisciplinary research team. Consultations were begun with psychologists, and a number of experts in this field joined with the physicians, dentists, anthropologists, statisticians, management specialists, and others in developing the plan. Within each of the named disciplines there were various specialty subgroups

involved—pediatricians, otolaryngologists, child development specialists, orthodontists, physicists specializing in the optics of vision, statisticians specializing in sample design, psychologists expert in behavior of children, and anthropologists skilled in human engineering problems. The list is not complete, but it is long enough to suggest the extent to which compromises had to be made and priorities assigned since all that everyone felt was necessary could not possibly be included.

Preliminary Studies and Tests

The planning phase of Cycle II included a number of different kinds of preliminary studies and tests, some of them involved and some fairly limited. In a few instances it was possible to take advantage of work that had already been done in some other connection. Thus one of the important areas of interest concerned the levels of auditory acuity. It had been recognized that there was need for new standards with respect to hearing levels in children. The American Academy of Ophthalmology and Otolaryngology had established the Subcommittee on Hearing in Children to work in the development of such new standards. This group had carried out a series of studies of school children in the Pittsburgh area, had developed the detailed content and form of the examination and the kinds of equipment required, and had acquired considerable experience in measuring auditory acuity in children. This group was interested in the survey because it would afford the chance to establish norms for the total national population.

From the viewpoint of the Health Examination Survey, the work which this subcommittee had completed provided extremely valuable developmental work. Arrangements were made for executive director of the Subcommittee on Hearing in Children, Dr. Eldon Eagles, to serve as a consultant to the Health Examination Survey. The audiometric portion of the second cycle examination was based on the work that had been done in the Pittsburgh studies. Dr. Eagles supervised the training of the technicians for the Health Examination Survey, and the Acoustical Laboratories of the University of Pittsburgh agreed to perform the calibration of the instruments used. Various other benefits accrued to the program as a result of the cooperative arrangement. In this instance,

the survey had essentially no developmental work to do because this had all been done in connection with the subcommittee activity.

With respect to the medical history instrument to be used, a methodological study was carried out to determine the form and to develop the exact wording of the inquiries. This was done for the survey by the Survey Research Center, affiliated with the University of Michigan, and was under the direction of Dr. Charles Cannell.

The determination to include psychometric tests in the second cycle program was not made until the planning was fairly well under way. Because of this late start, some of the methodological work in this area had to be delayed until after the second cycle was actually in the data collection phase. An example is a contract study to develop recommended methods of evaluating and analyzing the results of the modified Thematic Apperception Test which was being used. This study was undertaken by the Institute of Behavioral Research, Texas Christian University, and was under the direction of Dr. S. B. Sells.

Preceding the institution of actual data collection in Cycle II, there were two separate pilot test operations carried out. The first of these was an early partial pilot test conducted in December 1962 in Rocky Mount, North Carolina. This location had been the last of the 42 areas to be surveyed in connection with the Cycle I operation and the pilot test was carried out to get information on the attitudes which parents would have toward their children's participation in such a program, to gain more information on how well the children could perform certain tests, to explore ways in which arrangements could be made with schools for necessary released time, to determine the pattern of scheduling which would be most effective, to try out the proposed medical history questionnaire, and to gain some experience in carrying out a survey in the age group 6-11 years.

Approximately 70 children were examined in the Rocky Mount Pilot Test. The operation provided answers to some of the questions that were being asked and gave a basis for further planning work on many other items.

The work of planning the second cycle continued during the next 3 months, and in March and April of 1963 a further pretest of the examination

plan was carried out in Wilmington, Delaware. Certain modifications in plans that had been made on the basis of the first pretest were put into effect for this major pilot project, in which about 180 children were examined. Following this pilot study some further modifications were made and the second cycle data collection phase was initiated in July 1963.

THE SAMPLE DESIGN

General Plan

The sample design for the second cycle of the Health Examination Survey is quite similar to that used for Cycle I. The National Center for Health Statistics set specifications for the sample, developed the overall design, and carried out some of the steps of drawing the sample. Other steps in the sample selection were performed by the Bureau of the Census under a contract arrangement.

The sample design is that of a multistage, stratified probability sample of loose clusters of persons in land-based segments. The successive elements dealt with in the process of sampling are primary sampling unit (PSU), census enumeration district, segment (a cluster of households), household, eligible child, and finally, sample child.

The total number of children in the United States (including Alaska and Hawaii) who met the general criteria for inclusion in the universe sampled was about 24,000,000. This was the estimated U.S. population between the ages of 6 and 11 years inclusive as of mid-1964 excluding small numbers who were residing in institutions or residing outside the United States. It was decided to select a sample of close to 8,000 persons, a sampling fraction of about 1/3000. The distribution of the population in the 6-11 age group is fairly even over this range, and so there should be about 1,000 persons in each of the single years of age. Since the second cycle places much emphasis on factors related to growth and development and since year-by-year change is important in this period of growth, it was felt necessary to have a large enough sample to permit analysis of much of the data by single years of age.

Stratification and Selection of PSU's

The first stage of this multistage process consisted of the selection of PSU's. It was in this stage that stratification was carried out. In connection with the Current Population Survey and the Health Interview Survey the entire United States had been divided into nearly 2,000 PSU's and these had been grouped into 357 strata. (Each PSU is a standard metropolitan statistical area (SMSA), a county, or a group of several contiguous counties.) The sample selection process for the second cycle started with these 357 strata and grouped them into 40 superstrata which are referred to as the strata of HES Cycle II. The average size of each Cycle II stratum was 4.5 million persons, and all fell between the limits of 3.5 and 5.5 million. The grouping into 40 strata was done in a way that maximized homogeneity of the PSU's included in each stratum, particularly with regard to degree of urbanization, geographic proximity, and degree of industrialization. The 40 strata into which they were grouped were classified into 4 broad geographic regions (each having 10 strata) and cross-classified into 4 broad population-density groups (each having 10 strata). Each of the 16 cells resulting from the 4x4 cross-classification on geography and population density contained either 2 or 3 strata. A single stratum then might include only one PSU (or even only part of a PSU as, for example, in the New York City SMSA which was determined to represent two strata), or it might include several score PSU's.

The four broad geographic regions into which the HES strata were classified were groupings of States which approximated the Bureau of the Census regional groupings. The HES northeastern classification was identical to the corresponding Census region. The HES midwestern group differed from the Census North Central Region in that it did not include Kansas, Nebraska, and the Dakotas. The HES southern classification differed from the Census South Region in that it did not include Texas and Oklahoma. The six States specified above were included in the HES western grouping along with other States in the Census West Region. Figure 1 shows the sample areas.

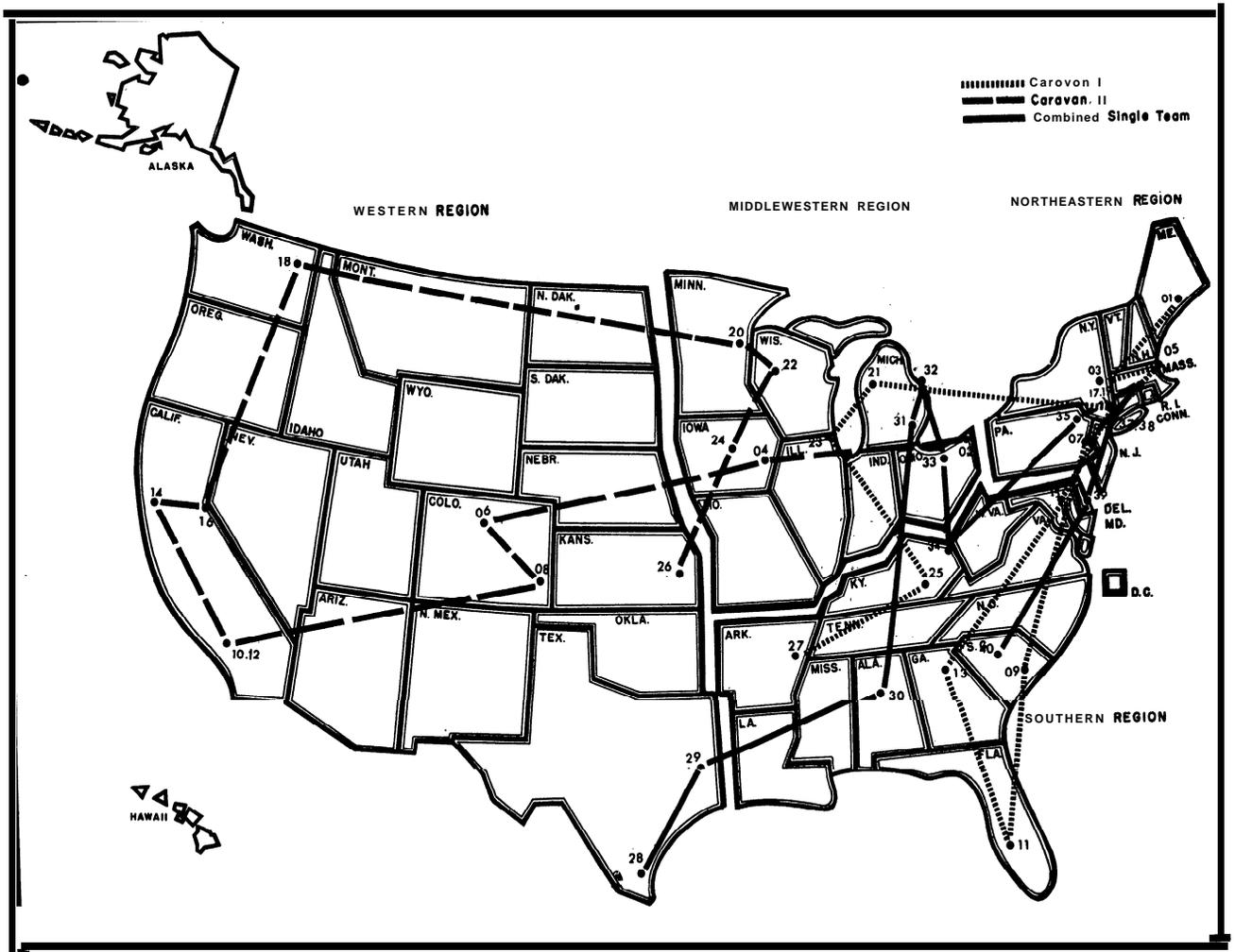


Figure I. Map showing sample areas and itinerary: Health Examination Survey Cycle I I.

The four population-density groups divide the United States into four roughly equal parts. It was necessary to combine some urban counties with rural areas because of the continuing diminution of the rural portions of the country. The population-density groups were defined differently for the four geographic regions, the attempt being to obtain a reasonable division of each region into the following four classes:

1. The largest metropolitan areas
2. SMSA's of specified size
3. Other SMSA's or specified highly urban areas
4. Other and rural areas

For the Northeast Region, New York City's two SMSA's and Philadelphia made up the entire three strata in Class 1. Class 2 in that region consisted of other SMSA's of over 1,000,000 population grouped in two strata, Class 3 consisted of the remaining SMSA's and Class 4 of all other urban and rural areas.

For the Middle West the strata in Class 1 consisted solely of the Chicago and Detroit SMSA's. Class 2 was made up of the other larger SMSA's, most of them over 500,000 in population. Class 3 and Class 4 were other SMSA's and all other areas, respectively.

In the South, the largest metropolitan areas class included all SMSA's over 700,000. Class 2

included all other SMSA's. Class 3 consisted of a specified group of highly urban areas. The other areas made up Class 4.

In the West Class 1 was defined as consisting of three strata, two of them the two Los Angeles SMSA's and the other including San Francisco and Seattle SMSA's. Class 2 included all other SMSA's over 550,000 population. The other SMSA's were grouped into two strata in Class 3, and all other areas made up Class 4.

Table 1 shows the number of strata in the second cycle classified according to population-density groups and broad geographic regions.

There was a third axis of stratification used in selecting the 40 PSU's for the second cycle. This pertained to the rate and direction of change in the population between the 1950 and 1960 census. The rationale here was that two localities in the same geographic region and with the same population density may differ markedly in ways related to health status if they have different rates of population change. A midwestern city of 400,000 may be quite different if on the one hand its population has remained constant over the past decade or on the other hand it has doubled its population during the past 10 years.

To take account of rate of change of population, the design specifications provided that within each region the 10 PSU's would be further classified into four classes ranging from those with no increase in population to those with the greatest relative increase. Each such class contained either two or three PSU's.

Having classified the PSU's into 40 strata with the subgroupings indicated above by region,

population-density groups, and rate of change of population, the selection of PSU's for the HES sample was made by selecting one PSU from each of the 40 strata. The technique used was one of controlled selection with the probability of selection of a particular PSU being proportionate to its 1960 population. In the controlled selection technique the attempt was made also to maximize the spread of PSU's among the States, subject however to all the limitations already laid down for the sample. It will be evident that the complete stratification implies a three-dimensional 4x4x4 grid, and that not every one of the 64 cells contributes a PSU to the sample of 40 PSU's. Nevertheless, the controlled selection technique ensures the sample's matching the marginal distributions in all three dimensions and being closely representative of all cross-classifications.

Further Stages of Sample Selection

Having selected the 40 sample PSU's, the further successive stages of sample selection called for selecting census enumeration districts (ED), segments, households, eligible children (EC), and finally, sample children (SC). All but the last two of these steps were carried out at headquarters prior to actually beginning the survey in a particular PSU.

In selecting the ED, segments, and households, account was taken of the PSU's 1960 population in the age group 5-9 years. Thus the probability of selection of a particular one of the ED was proportional to its population in that age group at the 1960 census date, which by 1963 roughly

Table 1. Number of HES Cycle II strata, by population-density group and geographic area, 1963-65

| Population-density group | Number of strata | | | | |
|---|------------------|------------|-------------|-------|------|
| | Total | North-east | Middle West | South | West |
| Total----- | 40 | 10 | 10 | 10 | 10 |
| Largest metropolitan areas----- | 10 | 3 | 2 | 2 | 3 |
| SMSA's of specified size----- | 10 | 2 | 3 | 3 | 2 |
| Other SMSA's or specified highly urban areas----- | 10 | 3 | 2 | 3 | 2 |
| Other and rural areas----- | 10 | 2 | 3 | 2 | 3 |

approximated the population in the age group that is the target of the second cycle. (The use of the 5-9 group was, of course, dictated by convenience since information about this group was readily available.)

Generally in a particular PSU, 10 ED were selected by a controlled selection technique. Then a similar selection was made of two segments in each one of the ED. Each of the resultant 20 segments was either a bounded area or a cluster of households (or addresses). The size of a segment was variable and was related to the 1960 population of children aged 5-9. It was expected to yield approximately 10 children in the age range 6-11 years at the time of the survey. Thus the expected yield per PSU was approximately 200. This feature of the sample design resulted in considerable variation among the PSU's in the number of households selected. In many of the sample PSU's this number was about 500, or about 25 per segment; in some, the number was more than double this. Thus, for example, in Sarasota, Florida, the sample design produced more than 1,000 households, and in Grand Rapids, Michigan, it produced fewer than 500. The total number of EC in each of these locations, however, was nearly the same.

The final stages of the sample selection, identification of EC and designation of SC, were carried out in the field immediately prior to the start of examinations in the particular PSU. The earlier steps in the sample selection process generally produced lists which identified each individual household selected in terms of the address and the name of the head of the household at the time of the 1960 census. (This last item was for convenience in those cases where it was still relevant; the household presently occupying that address was the one within scope of the survey.) Each of the households was visited and a listing of all members of the household provided the information on EC. All children in the age range properly resident at the address visited were EC. When the visits to households had been completed to the point where the total number of EC could be estimated fairly closely, a determination was made as to the pattern to be followed in reducing that number to the desired number of SC. The EC to be excluded from the SC group were determined by systematic subsampling.

Special, Problems

Early in the work of planning the second cycle it became apparent that the schools should play an important role in the program. Almost all of the population in the age group 6-11 years are in school for a large part of the time they could be examined. Thus, at a minimum, it would be necessary to have cooperation of school officials in releasing the children chosen to participate in the program. Beyond this, however, it was felt that a sample design which used the school populations as an element of stratification might have operational advantages. If, for, example, in a particular PSU it was possible to classify the total 6-11 population according to various groups of schools attended (including, of course, as one group the not-in-school children), a sample consisting of some appropriate number of sample children from one or more schools in each group might minimize the number of specific locations from which the sample children would come. It would, of course, be necessary to take proper account of various types of schools (public, parochial, private, and the like), of school size (number of students), and of some kind of socioeconomic classification of the schools (in terms of the predominant socioeconomic characteristics of the students enrolled), as well as other factors such as segregation in the regions where schools are segregated. Although some consideration was given to using the schools in this way as a sampling frame, the idea was abandoned. The principal reason for this decision was the unavailability of the necessary classificatory data concerning the schools.

Another scheme considered in the early stages of planning was to utilize two different size samples with the smaller one a subsample of the larger. The concept was that it might be desirable to select an original sample of 15,000 to 25,000 children and to make certain observations on all of this sample. The simpler elements of the examination—certain body measurements, for example—might be done on the larger sample. The smaller sample would be selected from this group and would be subjected to the additional examination and tests which require pediatrician time or special equipment and elaborate testing (e.g., audiometric tests). An important advantage

of such a scheme is that it would permit a two-phase selection of the smaller sample and would provide poststratifying information that would reduce sampling variance. In the further development of the plan this idea was dropped, however, largely because of the operational problems which it seemed to present.

One other modification of the basic sampling designed to minimize the geographic spread of the sample persons was considered and was actually used in a number of PSU's where examining was carried out in the first months of the second cycle. This was a subsampling stage involving the subdivision of a PSU into a number of districts—usually one central city area and four to six satellite areas. A random selection of some of the satellite districts was then made and all the sample in the central city and in the selected subareas or satellite districts was used for the household visit and final sampling. It was decided after a number of months' experience that the operational gains (in terms of further concentration of sample persons in limited areas) were not essential to carrying out the survey, and so this subsampling stage was abandoned in later stands.

Another special problem considered in the design of the HES sample for the second cycle concerns one of the effects of the clustering involved in the multistage sampling process. The sample children were chosen from among those in particular segments, those segments had been selected from sets of similar segments which taken together constituted the selected ED, the selected ED in turn had been chosen from among the sets of ED which taken together constituted the PSU's, and so on. Typically, the result of clustering of this type is to produce a sample having a somewhat higher sampling error than would be expected from a simple random sample of the same size. The introduction of clustering, however, reduces unit costs and this permits an increment in sample size which more than offsets the loss in sampling efficiency.

While there was no question but that clustering should be used in the survey, some consideration was given to whether the design should include some provision to control the selection of siblings. Since the household is one of the elements of the sample design, the number of related children in the resultant sample is greater than would come

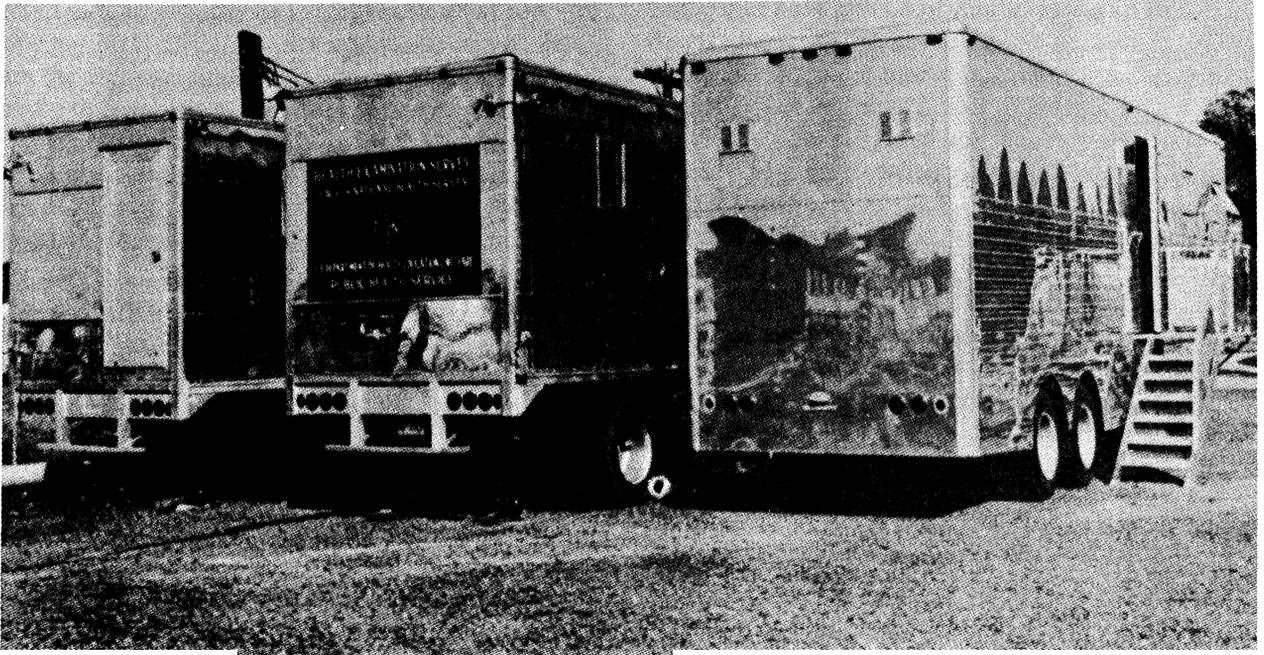
from a design which sampled children 6-11 years old without regard to household. This merited some special attention since many of the statistics collected in the survey are affected by genetic factors. If a sample child is small of stature, say, or is myopic or is high on an IQ scale, a sibling of that child is somewhat likely to deviate in the same direction.

Under the design used, it was necessary to visit about five households to obtain one household with any eligible children. Of the households having children in the 6-11 years range, a little less than half had two eligible children or more. If only one of these had been taken in each case and if overrepresentation of one-child households were to be avoided, it would have been necessary to increase the original group of households visited by more than 100 percent and would have considerably increased work of picking up and delivering the children. It was decided the advantage of obtaining a somewhat smaller variance by doing this was not great enough to justify the increased cost and difficulty. The chosen design contains the correct proportion of children from families having only one eligible child, from those having two eligible children, and so forth. The sample as a whole is properly representative of average measurement of the total population 6-11 years old. The fact that the sample contains a higher proportion of siblings than there would be in a systematic sample of every k th child does lead to some increase in variance but should produce no bias in the various estimated mean measurements, for example.

THE LOGISTICS

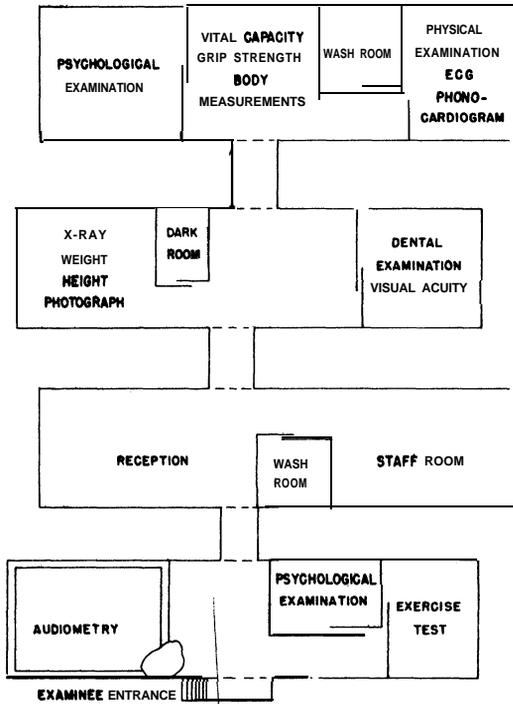
Mobile Examination Centers and Field Staff

The examinations in the first cycle had been carried out in specially constructed mobile examination centers and it was decided to use the same plan for the second cycle. Each of these two centers consisted of a set of specially designed trailers. The individual trailers making up a set were drawn by detachable truck tractors in making the move from one area to another. Then the trailers were set up side by side and covered passageways connected them to make the examination center (fig. 2).



THE MOBILE EXAMINATION CENTER

Floor plan



Caravan 1 - 4 trailers - each 35' x 8'

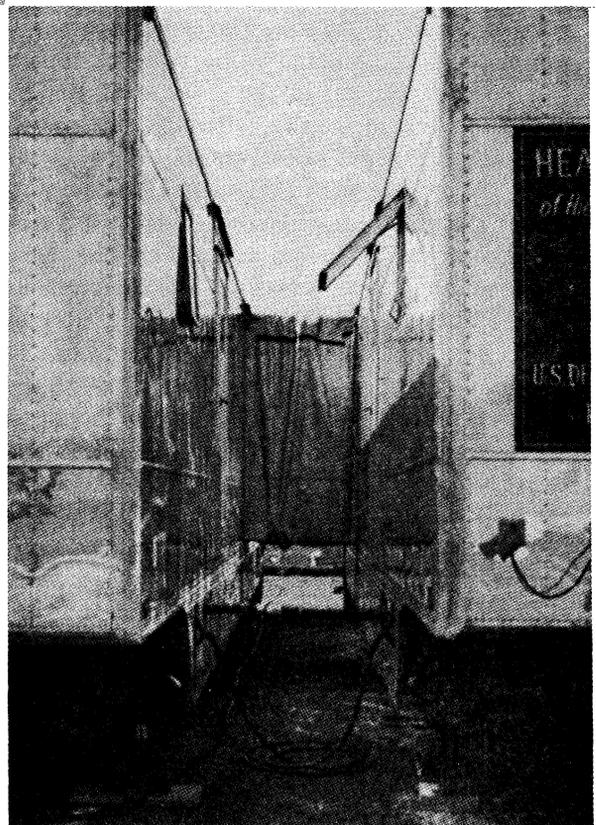


Figure 2. Mobile examination center.

The trailers which had been used in Cycle I were renovated and modified for the Cycle II examinations. In addition it was found necessary to add a new trailer to each set in order to provide a better environment for carrying out the hearing test. The decision to cooperate with the Subcommittee on Hearing in Children has already been noted. Their work had established that the expected hearing levels in the age group 6-11 years were substantially below (better than) those for adults and that precise measurement of these levels would require a soundproof room—not merely the soundproof booth that had been used for adult testing. The Subcommittee made available to the survey two specially constructed trailers (one for each set) which included a soundproof room along with other examining space.

The field staff of the second cycle consisted of three elements. One of these elements was the examining staff operating within each of the mobile examination centers. This included a physician, a nurse, a dentist, two psychologists, two technicians, a technician's aide, and a coordinator. The second element of the field staff consisted of field office managers, administrative assistants, and HES representatives, all of whom worked either in or out of an office established near the site of the mobile examination center. This second element of the field team arrived earlier than the examination period, carrying out certain household visits, scheduling, and related activities which are described later. There were one field office manager, two or three HES representatives, and one administrative assistant on duty at each location. Since some operations at a new stand began before all examinations at a preceding stand were concluded, the staffing pattern had to include some extra persons to provide for this overlap period. The third element, which also arrived ahead of the examining group, was a team of Census interviewers (usually five to seven persons) and a supervisor. Their work was completed during the week before the start of the examinations.

The examining physician was in all cases either a senior resident or fellow in pediatrics. This staff member, unlike the others, was generally employed only for a particular location, although some served later at other locations. Following visits by HES medical staff members

to numbers of medical schools and medical centers, arrangements were made well in advance for a physician to examine at a future stand. He was then given special training in the techniques of the particular survey. The examining dentist was a commissioned officer of the Public Health Service who continued on duty for 1 or 2 years in this position. The psychologists were temporary civilian employees of the Public Health Service and generally served from 3 to 9 months at various locations. Other members of the field staff (except for the Census employees) were full-time regular civilian employees of the Public Health Service.

Sequencing and Scheduling Stands

Among the general guidelines set forth above as constraints upon the plan of the survey were the requirements that the schedule take account of climatic variation and that it insure against the possibility of unrepresentativeness in the event the entire survey could not be completed. The former is a fairly obvious operational necessity; it would be impractical to conduct an examination survey such as this in the northern parts of the United States in the middle of the winter. The sample areas in the northern states were scheduled for completion during the mid-summer months, and the areas in the Deep South were visited in the winter.

This characteristic of the stand sequencing pattern is advantageous from an operational viewpoint, but it produces certain limitations in the resultant data. Because the sequencing of stands is controlled in this way the survey data cannot yield valid comparisons by geographic region for conditions which have a seasonal pattern. This is, perhaps, not too serious a limitation for many of the characteristics of particular interest in the second cycle because they are not likely to exhibit seasonal variations. It seems likely that visual acuity levels, for example, will not be much different regardless of the season of the year in which they are measured. It is obvious that this could not be said for such conditions as acute respiratory disorders. Even some of the body measurements taken such as weight may exhibit some seasonal variation, and this possibility must be taken into account in analysis of these data.

The other major consideration which entered into the determination of the sequence and schedule of the various locations or stands was provision against possible termination of the program before all of the locations had been visited. The action taken was to make a subsample selection of 32 of the 40 stands which would provide a less desirable but somewhat representative smaller sample and then to aim at a schedule which would include most of those stands in the first three quarters of the schedule. Then if it had become necessary to cut back the total sample it would have been possible with very little rescheduling to end up having completed all of those 32 stands along with a minimum number of other stands.

Another main constraint on the schedule and sequence was economy of operation. An effort was made to minimize the amount of travel necessary in moving from one stand to the next by sequencing with regard to geographic proximity.

The map (fig. 1) and the schedule (shown below) which was followed in the survey illustrate the moves. Cycle II used two caravans, two complete examining teams, and two administrative teams. It will be noted that during the latter part of the survey only one mobile examination center was used.

Advance Arrangements and Coordination

The conduct of the survey in any specific location is, of course, a responsibility of the Public Health Service, not shared with States or local health authorities or with others in the area. As a matter of policy, however, steps were always taken to fully inform the State and local health departments, and the medical, dental, and osteopathic professional organizations in the States and in the communities. In addition, since this program involved school children, the State and local officials concerned with public schools were always contacted, as were the appropriate local and diocesan officials of the parochial schools.

Typically, these contacts were made initially by a letter or telephone call giving a little information about the program and arranging an appointment for a personal visit to discuss the plan in detail. The representative of the survey who visited the health officials was usually a medical advisor to the program. The dental advisor always

wrote the dental association in the area and frequently arranged a visit as well. The visits to State school officials were always preceded by a general information and introductory letter from the Office of Education, which had been kept informed throughout the planning of the program. The assistance given by Dr. Fred F. Beach, Director of Elementary and Secondary School Organization and Administration Branch, is gratefully acknowledged. Visits to the various officials at the State level were followed by visits at the county and city levels.

The success of the survey owes much to the generous support it was given by health and education officials at every level, both public and private. This is exemplified, for example, in the June 1964 resolution passed by the House of Delegates of the American Medical Association "to express its approval of the program of the U.S. National Health Survey and to recommend cooperation by State medical associations and component medical societies." At the State and local levels support was manifested in the cooperation obtained in informing physicians of the survey. Frequently this was done by means of an article in a professional publication distributed to all the physicians in the area such as the monthly bulletin of the county medical society; sometimes it was done through individual mailings of a leaflet provided by the survey. Correspondingly, communication from the dental society usually went to its members and the superintendent of schools sent letters to school officials who might be contacted individually later. All of these steps increased the likelihood that the occasional inquiry about this program directed by a parent to the family physician or to the school principal, for example, would receive an immediate informed and favorable response.

The staff in the Washington headquarters routinely prepared professional releases concerning the program and provided them for the uses described above in informing physicians and dentists. In addition general news releases were prepared concerning each location operation and distributed to local news media timed to precede by a few days the beginning of the field operation in that area. As a result at most of the locations there were from one or two to half a dozen or more news items or feature stories published concerning the program. In some areas local radio

Cycle 11 schedule of stand operations

| <u>Stand #</u> | <u>Caravan I</u> | <u>Date</u> | <u>Caravan II</u> | <u>Stand #</u> |
|----------------|---|-----------------|---|-----------------|
| 1 | Portland, Maine----- | July-Aug. 1963- | Ashtabula, Ohio----- | 2 |
| 3 | Poughkeepsie, New York---- | Aug.-Sept----- | Ottumwa, Iowa----- | 4 |
| 5 | Boston, Massachusetts----- | Sept.-Oct----- | Denver, Colorado----- | 6 |
| 7 | Philadelphia, | | | |
| 9 | Pennsylvania ----- | Oct.-Nov----- | Lamar, Colorado----- | 8 |
| | Charleston, | | | |
| | South Carolina ----- | Nov.-Dec----- | Los Angeles, California--- | 10 |
| 11 | Sarasota, Florida----- | Jan-Feb. 1964- | Los Angeles, California--- | 12 |
| 13 | Atlanta, Georgia----- | Feb.-Mar----- | San Francisco, California- | 14 |
| 15 | Baltimore, Maryland----- | Mar.-Apr----- | Mariposa, California----- | 16 |
| 17 | New York, New York----- | Apr.-May----- | Moses Lake, Washington---- | 18 |
| 19 | New York, New York ¹ ----- | May-June-July | | |
| Cycle III | | | | |
| pretest | New York, New York----- | July-Aug----- | Minneapolis, Minnesota---- | 20 |
| 21 | Grand Rapids, Michigan---- | Aug.-Sept----- | Neillsville, Wisconsin---- | 22 |
| 23 | Chicago, Illinois ² ----- | Sept.-Oct----- | Chicago, Illinois----- | 23 |
| 25 | Barbourville, Kentucky---- | Oct.-Nov----- | Des Moines, Iowa----- | 24 |
| 27 | Marked Tree, Arkansas----- | Nov.-De&----- | Wichita, Kansas----- | 26 |
| 29 | Houston, Texas----- | Jan.-Feb. 1965- | Brownsville, Texas----- | 28 ³ |
| 31 | Detroit; Michigan----- | Feb.-Mar.-Apr-- | Birmingham, Alabama----- | 30 |
| Cycle III | | | | |
| pretest | Detroit, Michigan----- | Apr.-May----- | Lapeer & Marysville, Michigan----- | 32* |
| 32* | Lapeer & Marysville, Michigan----- | May-June----- | Cleveland, Ohio----- | 33 |
| 34* | West Liberty and Beattyville, Kentucky---- | June-July----- | West Liberty and Beattyville , Kentucky---- | 34* |
| 35 | Allentown, Pennsylvania--- | July-Aug----- | Manchester & Bristol, Connecticut----- | 36* |
| 36* | Manchester & Bristol, Connecticut----- | Aug.-Sept----- | Newark, New Jersey----- | 37 |
| 38 | Jersey City, New Jersey--- | Sept.-Oct.-Nov- | Georgetown, Delaware----- | 39 |
| 40 | Columbia, South Carolina-- | Nov.-Dec. | | |

¹Both examining and administrative teams, Caravan I only, in New York. Trailers were at 3 separate locations.

²Both examining and administrative teams, Caravans I and II, in Chicago; two locations.

³Beginning with Stand #28, use was made of both Caravans, but only one examining team was used. The additional administrative staff enabled the succeeding stand to be set up while examinations were in process at a given location.

*Examinations held at 2 locations.

Typical schedule for a stand

| | |
|----------------------------|--|
| Office setup----- | 1/22 Friday |
| Census interviewing----- | 1/25 Monday-1/29 Friday (5 days) |
| HER followup----- | 2/1 Monday-To close of stand |
| Trailer arrival----- | 2/2 Tuesday |
| Trailer setup----- | 2/3 Wednesday |
| Staff setup and training-- | 2/4 Thursday |
| Dry runs----- | 2/5 Friday |
| Examinations----- | 2/8 Monday-3/1 Monday (16 days) |
| Dismantle----- | 3/2 Tuesday |
| Trailer and staff move---- | 3/3 (Number of days dependent on distance) |

NOTE: Stand locations are cities in which trailers were located. Sample areas consisted of the PSU's which may have included several counties.

or television stations initiated contacts and the survey staff cooperated in providing the basis for programs concerning the survey or participating in them. The publicity efforts were kept at a fairly low-key level since volunteers not only were not sought but could not be accepted and since cooperation of parents was excellent without any extensive publicity. It did prove useful occasionally, however, for the interviewer to have a clipping from a local newspaper to quickly indicate the authenticity of the program.

Another kind of advance arrangements also had to be made in each area. These involved a visit by a survey staff member to determine an appropriate location for the mobile examination center and to initiate the many logistical actions required to conduct the survey. Arrangements were made for necessary electrical, plumbing, telephone, laundry, and other contractual services. Information on possible living arrangements was obtained and made available in advance to the staff, who then individually arranged their housing. Various local authorities such as the mayor and the chief of police were informed concerning the pending activities. The list of logistical measures which were required was a long one and the scheduling of the various steps had to be set far in advance to insure the smooth operation of the survey.

The Household Interview and Final Stages of Sampling

The foregoing discussion of the sampling plan had indicated that at the time the survey began operation at a particular location there was a list of addresses of households in particular clusters throughout the area. The Bureau of the Census sent a letter to each of these households informing them that they would shortly be visited by an interviewer collecting some information in connection with a health survey being made by the Public Health Service. At each of the listed households a Census interviewer made a visit and asked certain questions. The questionnaire used is shown as Appendix IA. Its contents are discussed in more detail later, but it may be noted here that the first group of questions asked of all households identified the composition of the house-

hold. If there were no eligible children in the household (no children between the ages 6 and 11 years), the interviewer completed the interview with a few questions related to the possible presence of another household on the premises. These abbreviated interviews required only about 5 minutes.

In the households in which the interview indicated there were eligible children, additional information was collected. The full interview usually required about 15 to 20 minutes. The final questions were asked only of the parent or guardian of the eligible child, the interviewer going back again if a parent was not present initially. At the end of the full interview the interviewer gave the parent a medical history form to complete for each eligible child. She explained that a representative of the Public Health Service would come to the house in about a week to pick up the completed medical history. This form is shown as Appendix IB.

When the household questionnaires have been completed by the Census interviewers, they are edited by the census supervisor for omission or inconsistencies and then turned in to the HES field management office. At this point the final stage of sample selection is carried out. A master list of all eligible children is prepared and is ordered according to segment and serial number. It will be recalled that the sample design provided for a variable number of households per segment, with the total number for any given location expected to yield approximately 200 eligible children. The actual number of eligible children was a variable which ranged from about 150 to 250. While the survey could tolerate some variation in numbers of sample children at a location, operational considerations limited the maximum to about 200. At this final stage of sampling therefore the actual yield of eligible children was the basis for a decision as to further sampling to reduce the size to manageable limits. If the number was 200 or less no further reduction was made and all eligible children were regarded as sample children. If on the other hand the number of eligible children was over 200, the rule for random reduction in sample size was used. (The rule prescribed the deletion of every n th name in the list as ordered above, starting with the y th name, y being a number between 1 and n selected randomly.)



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MEASURING VISUAL ACUITY

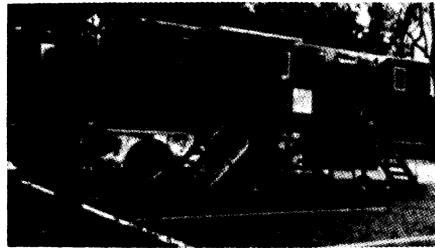


MEASURING BREATHING CAPACITY



MEASURING THE HEART RATE AFTER EXERCISE

YOUR CHILD and the Health Examination Survey



U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Center for Health Statistics
National Health Survey
WASHINGTON, D.C. 20201

THE HEALTH EXAMINATION SURVEY

The Health Examination Survey is part of the U.S. National Health Survey authorized by Congress in 1956. The purpose of the National Health Survey is to collect information about the health of Americans. This information will be used by medical researchers, educators, physicians, dentists, and many public and private agencies.

Some information is collected by asking people questions about themselves and their health. Other needed information can be obtained only by an actual health examination.

In 1962 the Health Examination Survey completed a survey of health conditions of persons 18 through 79 years of age. About 7,000 adults throughout the United States participated in the special health examination which was a part of that survey.

During 1963 through 1965, the Health Examination Survey is conducting a survey of the health of children who are 6 through 11 years of age.

Thousands of parents throughout the Nation will be asked questions about their children's health. Many of these parents will be asked to have their child come to a Health Examination Center for a special health examination. This examination is designed to provide information about the growth and development and the health of children at ages 6 through 11 years.

The examination is given in a Health Examination Center which consists of several specially built mobile trailer units. Transportation to and from the Center is provided by members of the Health Examination Survey. Arrangements are made with school officials when examinations are scheduled during school hours.

All information obtained in the interview and in the health examination is held in confidence.

DESCRIPTION OF THE HEALTH EXAMINATION

The special health examination of the Health Examination Survey is designed to provide information about the growth and development of children. It consists of the following:

- An examination by a pediatrician of eyes, ears, nose and throat, heart, and nerve and muscle systems.
- An electrocardiogram and a phonocardiogram of the heart.

An examination by a dentist of the teeth and mouth.

Psychometric measurements by a psychologist.

Tests of vision and hearing.

X-rays of the chest, hand and wrist.

An exercise test, pedaling a bicycle-like machine.

A grip-strength test.

Measurement of breathing capacity.

Height, weight and other body measurements.

The examination lasts about 3 hours. Each day there will be two examining periods—morning and afternoon. Six children will be examined during each period. Usually, the children will be from the same school and will know each other. Children who are examined during the morning period will be served lunch.

Children who participate in the special health examination will find it an interesting and enjoyable experience.

HOW YOUR CHILD WAS SELECTED TO PARTICIPATE IN THE SURVEY

The U.S. Bureau of the Census, working with the Health Examination Survey, has selected 40 areas in the United States which, taken together, are representative of the entire Nation. Each of these areas consists of one or more counties. These areas are located in the North, South, East and West. Some are urban and others are rural.

Within each of these 40 areas, approximately 500 houses are selected by scientific sampling methods. Every child in the 6-through-11-year age group living in one of these houses automatically becomes a part of a national sample group of about 9,000 children on whom health histories are obtained. The sample is then reduced by another sampling operation to give a sample of about 8,000 children to be examined. This national sample is representative of the roughly 25,000,000 children in the United States in this age group.

The information obtained from the examinations of children in this sample will make it possible to make good estimates of what information would have been obtained if all children in the 6-through-11 year age group had been examined.

Figure 3. Leaflet describing the program.

The remaining names were then taken as the group of sample children.

Appointment and Transportation Procedures

About a week after the Census interviewer had left a medical history form with the parents of each eligible child, an HES representative (affectionately called a HER, and appropriately so since most of these individuals are women) visited the household to pick up the form. That visit was designed to accomplish a number of things. If the form had not been completed, the HER attempted, usually successfully, to assist the parent in completing it at that time. If it had been completed or partly completed, the HER performed a quick review and edit and classified any incomplete or patently inconsistent entries. The HER then administered an additional interview, collecting a number of bits of information which it had been decided could be obtained better by an interviewer than by means of a self-administered questionnaire.

If the eligible child had been determined to be a sample child, the HER also explained the plan and nature of the examination program. She obtained the written consent of the parent for the child's participation in the examination, for the survey to transport the child to and from the mobile examination center, and for the survey to obtain additional information from school personnel, from a physician's, dentist's, or hospital's records, and from other official sources such as State registrars. She also indicated to the parents that the Public Health Service would be glad to forward to their physician and dentist the findings of the medical and dental examinations if the parents so wished and recorded such a request if it was made. Finally she explained that survey personnel would notify the parent of the date and time of the child's examination and she left a leaflet which described the program (fig. 3).

The field management office worked out the examination schedule, consulting with the various school principals whose students were involved concerning times when the children might be permitted to be away from school. In the scheduling, attempts were made to arrange the appointments so that transportation workload was minimized. A

note was sent to the parent both to inform him as to the specific examination time and to serve as a reminder of the program. On the appointed day a representative of the survey, usually one of the HER's, called for the sample child either at home for morning appointments or at school in the afternoon and drove him to the mobile examination center. After the examination had been carried out the child was taken back to school or to his home.

NATURE OF THE EXAMINATION

General Considerations

It has been pointed out that the primary focus of Cycle II was on measurements and health factors related to growth and development. The low incidence of chronic disease in the age group examined resulted in some lessening of the relative importance of the physician's role compared with the roles of other members of the examining team (technicians, dentist, psychologist, and so forth). This is reflected in the time allocations for the examination seen in the flow chart (fig. 4). The physical examination by the physician (assisted by the nurse) required about 30 minutes of the total time of approximately 3 hours. About the same amount of time was required for the work of the dentist, which, in addition to the dental examination, included certain tests and measurements related to vision. The other 2 hours were equally divided between the battery of tests administered by a psychologist and the series of tests, procedures, and measurements carried out by specially trained technicians.

The pattern of scheduling examinees with respect to time of day differed in Cycle II from that used in the earlier adult examination program. In Cycle I examinees were brought into the mobile examination center on a staggered pattern, with two examinations beginning at half-hour intervals. Each examinee went through the same sequence of examination elements. In the early pilot test work for Cycle II it was decided that the child would be more at ease if a number of children came in for examination at the same time. After some experimenting it was decided to bring in at one time all six children who would be examined in each half-day. It then became necessary to vary the sequence of their examinations since, for example, the six

HEALTH EXAMINATION SURVEY

Daily Flow Chart

Date _____

A. M.

P. M.

| | I ¹ | II ¹ | III ¹ | IV ¹ | V | VI |
|---------|----------------------------------|------------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------------------|
| 0 hour | T | T HEART ² | T | T HEART ² | T | T HEART ² |
| 1 hour | Psych | Psych | Vision Dental | Audio Xray Bike Body M. J | Physical Vision Dental | Body M. Audio Xray Bike J |
| | Dental Vision J | Audio Xray Bike Body M. J | Psych | Psych | Xray Bike Body M. Audio J | Physical Vision Dental |
| 2 hours | Physical | | | | | |
| | Audio Xray Body M. Bike | Physical Vision Dental | Xray Body M. Bike Audio | Dental Vision Physical | D Psych | D Psych |
| | D | D | D | D | | |

¹I and II the youngest, III and IV next
²II, IV, and VI must have preliminary heart examination

T includes temperature and undressing may be done at 0 hour or later.
Physical includes ECG and phonocardiogram
Dental and vision may include grip strength

Xray includes height and weight
Body Measurement includes vital capacity and may include grip strength

J-juice, D-dress
In A.M. an additional 10-15 minutes is required for lunch

Figure 4. Daily flow chart.

could not be examined by one physician at the same point in the sequence of examination elements if all examinees started together. In determining the sequence, a number of factors in addition to staff composition had to be considered. It was necessary, for example, to have a preliminary heart examination carried out for those examinees whose sequence called for the exercise tolerance test (shown as "bike" on the flow chart) in advance of the physician's examination. Another consideration was the desirability of having the younger

children take the psychological tests early in their sequences so that their responses would be less likely to be affected by physical weariness.

When the children first arrived at the mobile examination center, they were greeted by the nurse and the coordinator, a staff member with special responsibilities in the area of management of flow of examinees, records preparation, and the like. A brief explanation of the examination was given. Temperatures were taken and name tags provided. The children changed from their street clothes into

the examination uniform provided. It consisted of gymnasium-type shorts and a terry-cloth robe for the boys. The girls were provided with similar shorts, a specially designed blouse, and a terry-cloth robe. The examinees wore cotton socks on their feet. This uniform was designed to facilitate and standardize various elements of the examination such as the physician's examination, body measurements, and X-rays.

The Examination by Physician and Nurse

Each "Child's Medical History-Parent" form (Appendix IB), which had been completed in the household prior to making the appointment, was reviewed by the examining physician on the day before the scheduled examination. He paid special attention to any entries which suggested any limitation on the child's ability to perform any of the tests or procedures and to medical history items which required further followup in the course of the examination.

Before the standardized physical examination was begun, the physician examined any child whose temperature was 100° or over. If he determined the child was too sick to be examined further or if he suspected a contagious disease, the child was taken home without further examination. (In such cases the examination was rescheduled for another date.) Before the exercise tolerance test was taken by the child, the physician listened to the heart in order to exclude from exercise any child who might have heart disease.

The pediatrician's examination included a general inspection, examination of joints and muscles and neurological examination, eye examination, ears, nose, and throat examination, and cardiovascular examination. The nurse was present during the examination and assisted the physician. The examining procedure followed was a standardized one, but after the physician had completed the prescribed elements, he was free to follow leads or pursue particular points as he judged appropriate.

The general inspection included observation of gait, general appearance, and observable physical deformities, observation for tics or mannerisms and for evidence of finger sucking or nail biting, and notation as to evidence of breast development and presence of axillary hair.

With regard to examination of joints and muscles, the examinee performed various specified movements and the physician watched especially for any evidence of abnormality. When abnormality was noted or suspected the physician introduced additional procedures to confirm or rule out the condition.

The eye examination included careful inspection for evidence of styes, conjunctivitis, blepharitis, nystagmus, ptosis, and strabismus. In testing for strabismus, the pediatrician used the Hirschberg's method (corneal light reflex), the moving light test, and the cover test. When strabismus was found, the location, type, and confirming tests were recorded.

The examination of the ear, nose, and throat was the subject of special interest because of the possible relevance of findings in this examination to the audiometric data. The pediatrician was provided with a Welch Allyn pneumatic otoscope (in addition to a Siegle's otoscope and headlight) and had been given specific training in this particular technique. The examination included evaluation of the condition of the drum, auditory canal, and external ear, as well as inspection of the oral pharynx, tonsils, and nose.

The cardiovascular examination included the pediatrician's listening for and recording a detailed description of the heart sounds, innocent as well as significant murmurs. It also included recording a phonocardiogram and a 10-lead electrocardiogram. Two blood pressure readings were taken in a specified manner by the nurse (fig. 5).

The physician prepared a summary of findings and a report form to be used in sending a summary report on the examination to the child's physician. The selection of findings to be reported to the physician was limited to the results of procedures not ordinarily done in the usual pediatric examination such as electrocardiogram and audiometric examination and any medical conditions which were not already reported as known in the parent's medical history for the child. On occasions when the physician tentatively diagnosed a previously unsuspected condition which he felt required special followup (e.g., heart disease with X-ray or electrocardiogram findings), he communicated by telephone with the child's own

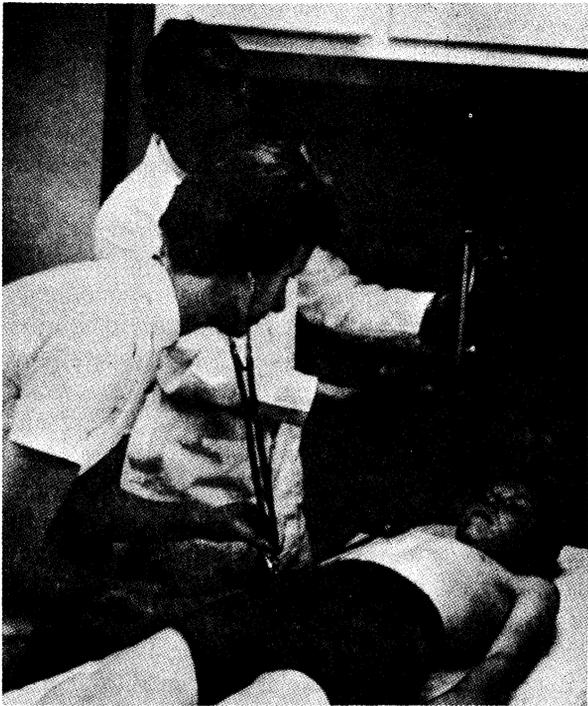


Figure 5. Blood pressure reading.

physician to apprise him of the findings. This, of course, was done only if the parent had given the signed consent to contact the physician. If not, the parent was notified by telephone if some acute condition requiring medical care was found in the examination.

The Dental and Vision Examinations

The dental examination was conducted in a standardized manner by the examining dentist, a PHS commissioned officer. It included determining and recording the status of each tooth space or of each tooth occupying a tooth space. Objective criteria for the examination were established to classify teeth as normal, carious, filled, filled-defective, nonfunctional carious, retained deciduous teeth and roots, missing, missing-space closed, or replaced. In addition, the eruption status of each permanent tooth not scored on the above scale was noted. An evaluation of oral hygiene was made based on amounts of debris and calculus on selected tooth surfaces. A periodontal index score was recorded for each

tooth determined by the presence and extent of gingival inflammation and pocket formation. A rating was given for nonfluoride opacities and fluorosis. Any fractures of permanent incisors were noted. Finally a detailed assessment of the status of occlusion was made (fig. 6).

An adjustable examining chair and a standard light source were used in the examination by mouth mirror and explorer of the teeth and gums. A staff member recorded the observations called out by the dentist. The examination required about 10 minutes. The procedure differed in several respects from that given patients seeking dental care. Teeth under inspection were not dried or isolated, oral calculus and debris were not removed, and tooth surfaces were not generally probed. All of these differences tend to produce some understatement in the number of defective teeth found.

The examining dentist completed a report form to be sent to the child's private dentist if such a report had been requested and authorized by the parent.

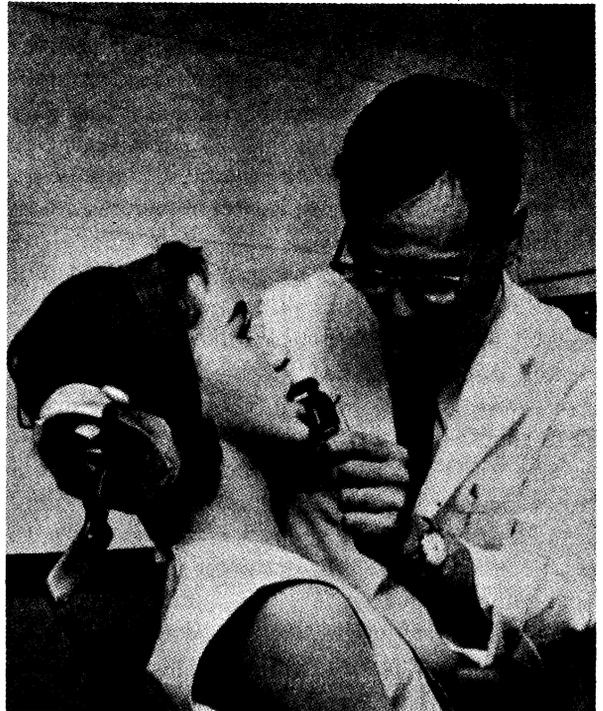


Figure 6. Dental assessment of the status of occlusion.

The fact that the administration of certain vision tests was by the examining dentist reflected operational considerations, since this member of the examining team had the requisite available time. Its effect, however, was to have these procedures carried out by a professional person who, once the necessary special training had been given, was highly adept at administering the test.

The vision examination included tests for color vision (Ishihara's screening test followed by Hardy-Rand-Rittler's test to establish fact, type, and degree for children failing), tests for monocular and binocular visual acuity at near and far distances (Bausch and Lomb Orthorater instrument with special Armed Forces plates supplemented by Landolt ring charts for illiterates), tests for distant and near lateral phoria and for distant vertical phoria, a test for accommodation (diopter test), and tests for binocularity (orthorater plates and "Worth 4-dot" tests). Except for color vision tests, the tests were made without glasses for those children who normally wore glasses. Administration of these tests usually required about 15 minutes.

Psychological Testing

The decision to include some measures relevant to intellectual and personality growth and development has already been mentioned. When this decision was reached, the staff survey sought advice from persons skilled in the area of psychological testing of children. With the assistance of the National Institutes of Mental Health, a meeting was arranged at which child psychologists from five leading universities considered the kinds of psychological data which a program such as the Health Examination Survey should attempt to collect. The consensus of this group was that the survey should include some measures of intelligence, including but not limited to verbal tests, along with some tests designed to get at some personality factors.

After first performing some pilot test work, it was decided to adopt the following tests as the battery for the survey:

1. Vocabulary subtest from the Wechsler Intelligence Scale for Children
2. Block design subtest from the Wechsler Scale

3. Human figure drawing
4. Selected cards from the Thematic Apperception Test
5. Wide Range Achievement Tests (1963 revisions of the arithmetic and reading sections)

The psychometric battery was administered by psychologists who had been trained at least at the level of the master's degree and who had had some experience in administering tests to children. The time required to test a single child was approximately 1 hour. None of the tests required the use of specially developed Health Examination Survey forms. Except for the Thematic Apperception Test, the test forms which are commercially available include space for the required answers or entries. In the case of the stories produced on the basis of the Thematic Apperception Test cards, the psychologist made tape recordings which were later transcribed and available for reading and evaluation.

A methodological study was carried out in order to obtain a critical objective evaluation of the psychological procedures chosen for the second cycle. This study included a literature review concerning each test component, recommendations concerning the kinds of inferences which could appropriately be made from the test results, and recommendations for further research which were felt necessary in order to make proper use of the data collected. This study was done on a contract basis by Dr. S. B. Sells of the Institute of Behavioral Research, Texas Christian University, and the results have been published in the Center's methodological series.³⁶

Tests, Procedures, and Measurements Done by Technicians

Each of the two field teams of the survey had two technicians who carried out the following operations: audiometric test, X-rays of chest and of hand and wrist, recordings of height and weight, spirometry, grip strength test, a series of body measurements, including skinfold thickness, and an exercise tolerance test. Each of the two technicians was trained to carry out all these opera-



Figure 7. Audiometric testing.

tions, and the children were assigned to one or the other by the coordinator. A third staff member, a technician aide, assisted the technicians in some of the procedures requiring services of a second person.

The audiometric testing was done in a specially constructed soundproof room large enough for the technician to be in the room with the child being examined (fig. 7). Each child was tested at eight different frequencies, and the 4000-c.p.s. frequency was repeated a second time. However, when the child showed fatigue, testing at the last two frequencies was omitted. For each frequency the sound was presented separately to each ear in the order prescribed on the recording form (Appendix IC). This was arranged so that for about half the children the first ear tested was the right and for the others it was the left. The technician recorded for each frequency the lowest decibel level at which a response was obtained in at least 50 percent of the trials (two out of three trials or three out of five). The audiometry testing procedures shown as Appendix II are part of the instructions to the technician contained in the staff instruction manual.

Two X-ray films were taken by the technicians; one was a 14x17 posterior-anterior

film of the chest at a distance of 2 meters, and the other was a 10x12 film of the right hand and wrist for the determination of skeletal age. All recommended precautions to minimize radiation hazard were taken, including use of a special "no scatter" cone, use of lead-rubber apron shields, conduct of dosimetry field surveys, and wearing of film badges by technicians. The X-rays were immediately developed in the mobile examination center to permit a retake of any film judged to be technically inadequate. No reading or interpretation of the X-rays was done at the mobile examination center, however, the physician looked at the chest film prior to recording his summary of findings. The reading of both chest and hand-wrist X-rays was done by special readers after the records had been transmitted to the Washington headquarters office.

Spirometry was administered by a technician using a Collins 6-liter vitalometer. The examinee was instructed to take as deep a breath as possible and blow it all back through the tube. The vitalometer traces the maximal forced expiratory volume (or vital capacity) on a timed rotating cylinder which can be measured to show the desired parameters such as peak flow rate. Three separate recordings were made for each examinee. The examining room temperature and barometric pressure at the time of examination were recorded.

A test of grip strength was made, using a dynamometer—three separate tests for each hand. The examinee's statement as to his "handedness" was recorded at this time.

The survey used a special self-balancing scale to record the examinee's weight directly on the record form. A special device was also used in measuring height. The examinee stood on a platform; he was backed against a vertical bar to which an adhesive strip with his examination number was fastened (fig. 8). He stood under a movable horizontal arm which was adjusted to fit snugly on top of the examinee's head while he stood up straight with feet together and head in the Frankfort plane. When the technician had positioned the examinee, he pressed the button attached to a camera mounted on the movable arm and focused on the scale and pointer arrow. This camera delivered a finished print 10 seconds later which became part of the



Figure 8. Measuring standing height.

examinee's record. The measurements of height and weight were made with the examinee wearing the special uniform and only the socks provided on his feet.

Body measurements on each examinee were made by one of the technicians with the technician aide serving as recorder. In addition to the standing height and weight measurements already described, they made 30 separate measurements. Sixteen of these had been made in the adult program of Cycle I; the other fourteen were new. The measurements made included a wide variety of skinfold thicknesses, girths, heights, breadths, and lengths. The recording form used indicates the specific items (Appendix ID).

The equipment used included several anthropometers (Siber Hagner & Co., Inc., New York, New York), sliding calipers (Hudlicka type, 30

cm.), skin calipers, steel tape measures, footstools, and a specially designed body measurement table for examinations requiring that the examinee be seated. Measurements were recorded to the nearest millimeter.

Finally an exercise tolerance test was carried out. This test made use of a bicycle ergometer, a bicycle-like device on which the examinee sat and pedaled while holding onto handlebars. The equipment could be set for the desired workload, and the amount of work being performed was thus a known quantity. The end point of the test was the examinee's pulse rate, which was monitored and recorded by means of special equipment (Kenelco) fastened to the examinee by an electrode attachment. A reference table specific for age, sex, and weight of the child was provided so that the technician could determine the appropriate load setting for the equipment. The examinee made a 1-minute-test run; then if the pulse rate had advanced appropriately, he continued for the 2-minute-test ride. If the test run indicated underloading or overloading, the load was adjusted, and then the test was continued. Variables recorded directly on the case record included the pulse rate before exercise, the pulse rate at 2 minutes after end of exercise, the maximum pulse rate during the 5 minutes directly after exercise, and the rate at the end of the 5-minute rest after exercise. The technician also recorded the workload adjustment and the temperature and humidity of the examining room at the start of the test. In addition, the equipment traced a timed graph of the pulse rate throughout the test.

THE ANCILLARY DATA COLLECTED

General Considerations

In describing the logistics of the survey, mention has been made of several questionnaires: the household questionnaire administered by the Census interviewer at all households visited and the child's medical history and the HER interviewer-administered questionnaire for sample children. An attempt was made to obtain information for sample children on a questionnaire sent to the schools (Appendix IE). In addi-

tion a copy of the birth certificate of each sample child was requested from the appropriate State office.

It should be recognized that data obtained on the questionnaires were intended to serve various purposes. In some cases the data were desired to classify health information and examination findings such as data on income or educational class of the parent. In other cases the information was requested to facilitate subsequent survey operations. Examples of this are information on the grade and school of the child or on the name and address of the child's physician. Other items were included to assist the physician in his examination of the child. Thus the physician was alerted to the occasional child who had some physical limitation which would require special handling in the examination (e.g., a limitation on physical exercise imposed by the child's physician would be a contraindication for the exercise tolerance test).

Sometimes the medical history suggested to the physician the necessity for his paying particular attention to some part of the clinical examination. It was recognized that this would result in the physician's examination not being quite the same thing for every examinee. A blind-type design in which the physician did not see the medical history would produce somewhat different results in some cases. It was felt, however, that the advantages of an examination procedure more nearly like that in clinical practice outweighed any disadvantages. So the physician not only reviewed the medical history in advance of the examination, but he was instructed to go on to administer further special examinations in some instances where his initial examination made him suspect the presence of a defect such as a neurological abnormality.

Frequently the reason for collecting data on the questionnaires was the desire to relate that information to some specific part of the examination findings. Thus the child's medical history provides information concerning injuries to the ear, past operations, earaches, and the like which can be examined in relation to the results of the audiometric testing.

Relatively few items were collected on the questionnaire in order to describe the total universe sampled with respect to the character-

istic covered by a specific question, but there are some such items. An example of such a question is the one which asks whether the parent feels that the child's teeth need straightening. Of course, here there was also interest in relating the response to this question to the findings on the child's dental examination with respect to occlusion status.

Description of Separate Source Documents

The household questionnaire was the basic source document which provided required demographic data concerning the population sample as well as serving in the final stage of sample selection. This form, which has already been referred to briefly, is shown as Appendix IA. The form was administered by a Census interviewer who had already filled in the identifying numbers of the PSU, segment, and so forth (items 2-6, page 1) prior to visiting the household. The interviewer began with question 1 on pages 2 and 3 of the form and inquired about the household composition. A column was completed for each member of the household, and age, sex, race, and relationship to household head were recorded. For all children between ages 5 and 12, the exact date of birth was recorded. The target population was children between 6 and 11 years of age, inclusive, but pilot studies indicated the desirability of special checking on the ages of children within 1 year above or below this range. For households in which there was one eligible child or more, the additional information called for in questions 6 through 14 was obtained. These include information on the school attended and the grade for each eligible child as well as information on education, county of birth, handedness, working status, and marital status for each of the parents. In addition, questions were asked which provide total family income and a basis for further questions in a subsequent interview to elicit a complete history of all marriages for each of the parents. Another question (No. 13 on page 2) gets at the occurrence of certain specified events such as a death in the family which might be regarded as potentially traumatic in the child's life. At the conclusion of the interview the interviewer leaves the medical history form to be completed by the parent (Appendix IB). This

form was designed to be self-administered. The operation plan, however, provided that it would be picked up personally by one of the HES interviewers. This afforded an opportunity for the staff member to do an on-the-spot edit of the completed form and to ask about any missing or questionable entries. In something like 10 percent of the cases, the form had not been filled out when the interviewer called back. In such cases the interviewer assisted the parent in completing it then and there, and in those instances the form was regarded as HER interviewer-administered. In all the other cases the interviewer reviewed the form and asked about any problem entries. The instructions for completing the interviewer-administered questionnaire indicate how this was done (see Appendix IF for both form and instructions).

The HER interviewer-administered questionnaire collected four kinds of data: (1) some information on the child's eating habits and the parent's perception thereof, (2) a record of all marriages with dates and reasons for termination in the case of broken or multiple marriages of either parent, (3) characterization of twins as identical or fraternal, and (4) a number of items concerning the behavior of the child and the parents perception of that behavior (e.g., tense or relaxed, strong temper, and time spent in watching TV). The particular characteristic of questions included in this group, as distinct from those on the self-administered child's medical history-parent form, was that they either required special handling on the part of the interviewer or concerned subjects which were thought to be sensitive and so better handled through discreet personal inquiry.

Another set of ancillary data was contained in a questionnaire obtained from the school at which the sample child was a student (Appendix IE). This form was intended to serve several purposes. For one, it provided official information on the child's grade placement, an item collected from the parent but subject to potential error. More important, it served as a measure of the child's success in a major part of his real life situation (going to school) and so afforded an independent evaluation of the child which could be compared with the findings of the examination.

It attempted to identify the child whose health (including mental ability) problem or difference had come to the attention of school teachers. Thus, for example, the child who was known to have a vision or hearing problem was identified. Moreover, it attempted to obtain subjective ratings from the teacher as to various aspects of the child's behavior and adjustment. These could then be examined in relation to the results of various tests given in the survey. The form was given to the school principal, who was asked to have it filled out by the child's teacher or whom-ever the principal believed to be the best informed respondent. In those locations visited during the summer months when school was not in session, the questionnaires were mailed to the school in the early fall with a request that they be completed and returned. Mail followup was made when the questionnaire was not received within a reasonable time. The overall results were that school questionnaires were obtained for about 95 percent of the sample children.

The final source document for ancillary data was the birth certificate of the sample child. After an examination was completed, a request was sent to the registrar of vital statistics in the State reported on the parent's questionnaire as the birthplace of a child to obtain a copy of the birth certificate. Arrangements had been made in advance with the States to do this on a fee basis and consents had been obtained from the parents during the household contacts. The birth certificate copies were desired for several reasons. It was important, particularly in connection with the scoring of psychological tests but also in connection with the analysis of all the growth and development data, to have the exact and correct age for each child. It was also felt that the mother's age at the birth of the child could be obtained more accurately from this document than from reconstruction from the age reported in the household interview along with the child's age. Finally, the birth certificate provided some information related to the child at birth (birth weight, congenital conditions noted at that point, and complications of delivery) which could be related to some of the findings of the survey examination.

QUALITY CONTROL

In a program like the Health Examination Survey the problems of nonsampling variability, or measurement error, loom large. The data recorded for each sample child are inflated in the estimation process to characterize the larger universe of which the sample child is the representative. In any measurement process, here thought of as encompassing all aspects of obtaining and recording the desired data, there is inevitably some measurement error. Considerable attention was given to this problem in this program.

The attack on measurement error began with a concerted effort to minimize it. Decisions as to what would be included in the examination took account of the expected feasibility of collecting reliable and valid data. The procedure for conducting each part of the examination was standardized, and written instructions spelled out in detail how each step was to be performed. The staff was carefully selected, and elaborate programs of training and retraining were carried out. Some of these were formal training programs like the special 2-week period of training in audiometric testing given to technicians prior to their undertaking this work. Others were "in-house" retraining efforts such as those carried out on a day set aside at the beginning of each operation at a new location. On this day, for example, examinations were performed on nonsample persons under the supervision of headquarters staff. Similar retraining of both Census and HES household interviewers was done at the beginning of operations in each new location. The necessity for *uniformity, accuracy, legibility, and completeness* in the recording process was constantly stressed.

To the maximum feasible extent the recording process was mechanized by the use of such devices as tape recorders, automatic printing of results, and photographic recording of scale readings (fig. 9). Such methods not only reduce recording errors but provide "hard" documents for replicate reading. Of course the use of instruments not only for recording but also for measuring introduces another source of possible variation, and so systematic calibration and recalibration must be carried out. This was done in the Health Examination Survey for a wide variety of instruments

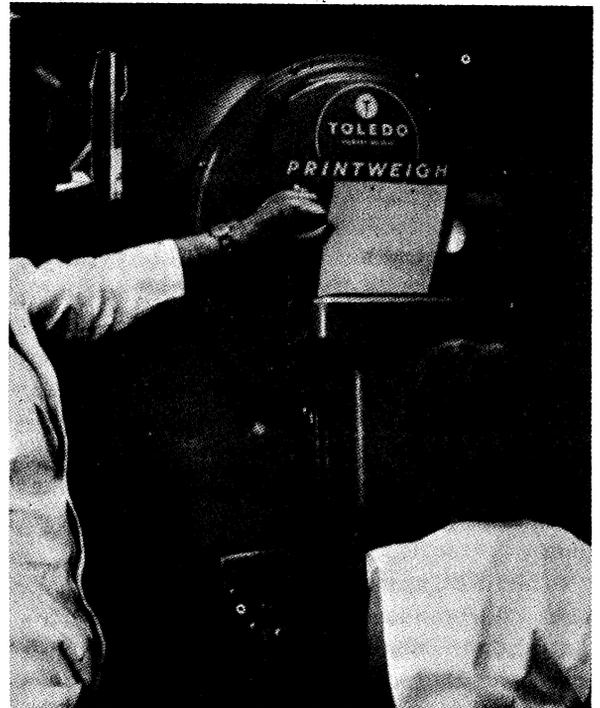


Figure 9. Automatic recording of scale readings.

from audiometers to self-balancing scales and sliding calipers.

Despite all precautions there is a degree of residual measurement error. Because this was recognized, an effort was made to monitor the measurement errors that could be identified as the survey was carried out. This was done in many ways and for two basic reasons; first, by becoming aware of certain kinds or causes of measurement error it was possible to further reduce it in the subsequent survey operation; second, in monitoring it, some measurement of its extent was frequently obtained. This monitoring was done sometimes by observing the process and noting deviations from the prescribed procedures, sometimes by reviewing and comparing recorded data and noting differences among technicians which suggested examiner differences, and sometimes in other ways.

An illustration of how this occurred and led to corrective action follows. In observing the taking of body measurements in the standing position, the observer noted that the technician

making the measurements was not always able to observe that the examinee had deviated from an erect vertical stance. A procedure was subsequently initiated whereby responsibility for observing this specific fact was placed upon the recorder who was better located to notice any deviation.

Whenever the end product of a particular examination element is a "hard document" (such as the X-ray film or the electrocardiographic tracing), the reading and interpretation of that record can be done independently more than once. Differences, then, are brought to light and can be resolved through appropriate measures. This replication of the step not only can be used to provide resolution of differences but examination of the extent of initial differences can give a measure of the measurement error that would have been involved had only the initial reading been used.

By extending this same process and by replicating certain parts of the examination at times, it is possible to learn something about the extent of the examiner's contribution to variability in the data. To a limited extent some replication of parts of the examination was done at various times in the survey. Sometimes this was done by having repeat examinations of the same subject (a nonsample person) during the retraining sessions, or a part of the examination on a sample child was later repeated independently, sometimes by the same examiner and sometimes by a different one. Whenever replicate examinations of sample persons were done, the original observation was retained as the datum to be included in the survey. The second measurements were made only to use as a basis for determining (by comparison with the original measurements) something about the extent of measurement variability in the data.

The findings of the survey will be published in the *Vital and Health Statistics* series of reports. In general, each of these reports will present the findings with respect to some one or several aspects of the examination. In these reports attempts will be made to apprise the reader of the extent to which the data may be affected by measurement error and to call attention to this problem. In some instances the measurement process and the recorded evidence permit computation of particular measurement error; in other cases a part

of the measurement error is included in the calculation which yields a "standard error" and thus is consolidated with sampling error.

RESPONSE RESULTS

Level of Participation Achieved

The sampling plan, making use of known probabilities of selection, assured that the sample selected would be representative of the total target population. Although the design did not call for stratification by sex, separate years of age, or race, post-stratification adjustments which will be made in the estimation procedure will result in the distributions being identical in these regards (Appendix III). The sex, age, and race distributions of the total target population are shown in table 2. Even though the sample be perfectly representative, however, the survey results might be seriously biased if a high proportion of those selected in the sample were not examined. The response rate may be critical in assessing the success of a voluntary sample survey of this sort.

The sample actually selected for the second cycle program consisted of 7,417 children at ages 6-11 years. The proportion of this sample finally examined was 96 percent (7,119). This high level of participation—only 4 percent nonresponse—gives striking evidence of the willingness of parents of children in the United States to cooperate in Public Health Service programs involving medical examination of children. The level of response in the first cycle, which involved adults, was considerably lower (86.5 percent), and that result is regarded as highly successful. The high response rate is also evidence of the outstanding skill, devotion, patience, and effort demonstrated by the field staff of the program during the 3 years required to carry out the operation.

The range of level of participation throughout the 40 stands at which examinations were conducted was fairly limited. The mean response rate (96.0 percent) represents individual stand response rates ranging only from 91 to 100 percent. There were two locations at which every one of the sample children was examined. The numbers for each individual location are shown

Table 2. Percent distribution of the total U.S. noninstitutionalized population between 6 and 11 years, by age, color, and sex: Health Examination Survey, 1963-65

| Color and sex | Age in years | | | | | | | |
|-----------------|--------------|----------------------|------|------|------|------|------|------|
| | Total 6-11 | Total 6-11 | 6 | 7 | 8 | 9 | 10 | 11 |
| <u>Total</u> | | Percent distribution | | | | | | |
| Both sexes----- | 100.0 | 100.0 | 17.2 | 17.2 | 16.8 | 16.6 | 16.3 | 15.9 |
| Male----- | 50.8 | 100.0 | 17.2 | 17.2 | 16.8 | 16.7 | 16.2 | 15.9 |
| Female----- | 49.2 | 100.0 | 17.2 | 17.2 | 16.7 | 16.6 | 16.3 | 16.0 |
| <u>White</u> | | | | | | | | |
| Both sexes----- | 85.8 | 100.0 | 17.2 | 17.2 | 16.7 | 16.6 | 16.3 | 16.0 |
| Male----- | 43.7 | 100.0 | 17.2 | 17.1 | 16.7 | 16.7 | 16.3 | 16.0 |
| Female----- | 42.1 | 100.0 | 17.2 | 17.2 | 16.7 | 16.6 | 16.3 | 16.0 |
| <u>Nonwhite</u> | | | | | | | | |
| Both sexes----- | 14.2 | 100.0 | 17.4 | 17.4 | 16.9 | 16.7 | 16.1 | 15.5 |
| Male----- | 7.1 | 100.0 | 17.5 | 17.3 | 17.0 | 16.7 | 16.0 | 15.5 |
| Female----- | 7.1 | 100.0 | 17.4 | 17.4 | 16.9 | 16.7 | 16.1 | 15.5 |

NOTE: Data are based on estimates for August 1, 1964, which are unpublished figures from the Bureau of the Census.

in table 3. By way of contrast, the range of response rate for the Cycle I adult examination program was considerably wider, from 66 to 98 percent.

Differential Response Among Demographic Subgroups

The possibility of data from a sample survey being biased by a high rate of nonresponse is, of course, related to the possible differences between the nonrespondents and the respondents. Even a high nonresponse rate would not bias the findings if the nonrespondents were completely like the respondents with respect to all of the characteristics being studied. Conversely a low nonresponse rate might bias the findings in some respects if there were marked differentials in response among the subgroups being examined. A high level of response greatly reduces the likelihood

that serious bias will result, but it is still appropriate to ask whether the group of children actually examined in the survey differed from those who should have been but were not examined. This cannot be answered, of course, for the factors that were obtained only by the process of examination; however, the survey did collect considerable demographic data on almost all the sample children, and so some comparison can be made.

The findings of the Health Examination Survey will be presented separately by sex and by single years of age and, frequently, by certain other demographic characteristics, notably race, geographic region, population density groups, parents' educational level, and family income. The response levels for the subgroups involved in each of these axes of classification show no marked differentials in response rates. It appears unlikely

Table 3. Number of sample children, number and percent examined, by stand number and location: Health Examination Survey, 1963-65

| Stand location ¹ | Stand number | Number sample children | Examined | |
|--|--------------------|------------------------|----------|--------------|
| | | | Number | Percent |
| All stands----- | ... | 7,417 | 7,119 | 96.0 |
| Portland, Maine----- | 1 | 200 | 198 | 99.0 |
| Ashtabula, Ohio----- | 2 | 185 | 175 | 94.6 |
| Poughkeepsie, New York----- | 3 | 193 | 190 | 98.4 |
| Ottumwa, Iowa----- | 4 | 196 | 195 | 99.5 |
| Boston, Massachusetts----- | 5 | 192 | 174 | 90.6 |
| Denver, Colorado----- | 6 | 192 | 189 | 98.4 |
| Philadelphia, Pennsylvania ^I ----- | 7 | 192 | 174 | 90.6 |
| Lamar, Colorado----- | 8 | 183 | 183 | 100.0 |
| Charleston, South Carolina----- | 9 | 186 | 171 | 91.9 |
| Los Angeles, California----- | 10 & 12 | 285 | 266 | 93.0 |
| Sarasota, Florida----- | 11 | 188 | 185 | 98.4 |
| Atlanta, Georgia ^I ----- ^C | 13 | 191 | 187 | 97.9 |
| San Francisco, California----- | 14 | 189 | 187 | 98.9 |
| Baltimore, Maryland----- | 15 | 193 | 186 | 96.4 |
| Mariposa, California----- | 16 | 188 | 186 | 98.9 |
| New York, New York----- | 17 & 19 | 421 | 390 | 92.6 |
| Moses Lake, Washington----- | 18 | 193 | 189 | 97.9 |
| Minneapolis, Minnesota----- | 20 | 201 | 194 | 96.5 |
| Grand Rapids, Michigan----- | 21 | 191 | 186 | 97.4 |
| Neillsville, Wisconsin----- | 22 | 201 | 201 | 100.0 |
| Chicago, Illinois ^I ----- | 23 | 301 | 283 | 94.0 |
| Des Moines, Iowa----- | 24 | 160 | 159 | 99.4 |
| Barbourville, Kentucky----- | 25 | 196 | 185 | 94.4 |
| Wichita, Kansas----- | 26 | 188 | 178 | 94.7 |
| Marked Tree, Arkansas----- | 27 | 186 | 182 | 97.8 |
| Brownsville, Texas----- ^I | 28 | 179 | 175 | 97.8 |
| Houston, Texas----- | 29 | 186 | 181 | 97.3 |
| Birmingham, Alabama----- | 30 | 149 | 144 | 96.6 |
| Detroit, Michigan----- | 31 | 168 | 162 | 96.4 |
| Lapeer and Marysville, Michigan----- | 32 | 179 | 175 | 97.8 |
| Cleveland, Ohio----- | 33 | 175 | 166 | 94.9 |
| West Liberty and Beattyville, Kentucky----- | 34 | 172 | 160 | 93.0 |
| Allentown, Pennsylvania----- | 35 | 173 | 159 | 91.9 |
| Manchester and Bristol, Connecticut----- | 36 | 174 | 167 | 96.0 |
| Newark, New Jersey----- | 37 | 177 | 167 | 94.4 |
| Jersey City, New Jersey----- | 38 | 175 | 163 | 93.1 |
| Georgetown, Delaware----- | 39 | 163 | 159 | 95.5 |
| Columbia, South Carolina----- | 40 | 156 | 148 | 94.9 |

¹**Cities** in which trailers were located. Sample areas consisted of the **PSU's** which may have included several counties.

NOTE: Sample "take" for Los Angeles was deliberately somewhat low for "two stand locations" because that area should be only slightly over **1-1/2** stands on a Population basis. Chicago, on the other hand, was oversampled in comparison with other "one stand locations," **since** it should be represented by slightly under **1-1/2** stands.

Table 4. Number of sample children and number of children examined, by age, sex, and color: Health Examination Survey, 1963-65

| Sex and color | Age in years | | | | | | |
|----------------------------------|--------------|------------|--------------|--------------|------------|------------|------------|
| | Total 6-11 | 6 | 7 | 8 | 9 | 10 | 11 |
| <u>Number of sample children</u> | | | | | | | |
| Both sexes | 7,417 | 1,161 | 1,293 | 1,281 | 1,231 | 1,208 | 1,243 |
| Boys | 3,765 | 596 | 655 | 649 | 618 | 594 | 6 5 3 |
| Girls | 3,652 | 565 | 638 | 632 | 613 | 614 | 590 |
| <u>White</u> | | | | | | | |
| Both sexes | 6,380 | 995 | 1,112 | 1,081 | 1,065 | 1,059 | 1,068 |
| Boys | 3,276 | 508 | 572 | 565 | 539 | 526 | 566 |
| Girls | 3,104 | 487 | 540 | 516 | 526 | 533 | 502 |
| <u>Nonwhite</u> | | | | | | | |
| Both sexes | 1,037 | 166 | 181 | 200 | 166 | 149 | 175 |
| Boys | 489 | 88 | 83 | 84 | 79 | 68 | 87 |
| Girls | 548 | 78 | 98 | 116 | 87 | 81 | 88 |
| <u>Number examined</u> | | | | | | | |
| Both sexes | 7,119 | 1,111 | 1,241 | 1,231 | 1,184 | 1,160 | 1,192 |
| Boys | 3,632 | 575 | 632 | 618 | 603 | 576 | 628 |
| Girls | 3,487 | 536 | 609 | 613 | 581 | 584 | 564 |
| <u>White</u> | | | | | | | |
| Both sexes | 6,100 | 950 | 1,063 | 1,035 | 1,019 | 1,014 | 1,019 |
| Boys | 3,153 | 489 | 551 | 537 | 525 | 509 | 542 |
| Girls | 2,947 | 461 | 512 | 498 | 494 | 505 | 477 |
| <u>Nonwhite</u> | | | | | | | |
| Both sexes | 1,019 | 161 | 178 | 196 | 165 | 146 | 173 |
| Boys | 479 | 86 | 81 | 81 | 78 | 67 | 86 |
| Girls | 540 | 75 | 97 | 115 | 87 | 79 | 87 |

that nonresponse could bias the findings much in these respects (table 4).

The differentials in response rates that did occur among the various demographic subgroups all varied within a fairly limited range. Thus the range of percentages examined for single years of age was only between 94.8 and 97.0 percent,

The proportion of males examined was 96.5 percent and the proportion of females 95.5 percent. Examinations were carried out on 95.6 percent of all white sample children and on 98.3 percent of nonwhite sample children (largely Negro). Even when age, race, and sex are considered together, the range of response was only from 93.9 percent

to 100.0 percent. (Both of these extreme values happened to be for 9-year-old girls, the first white, the second nonwhite.) The other parameters named show about the same limited range of variation in response. Thus the variation by region is only from 93.9 to 97.3 percent. On the basis of population-size classes the range is from 93.1 to 98.6 percent when the data are classified in fullest detail (eight groups, from 3 million and over to rural). Similarly the range of variation response rates through six groups by total family income is only from 92.4 to 97.5 percent. Finally the variation in percentage cooperating was only from 94.1 to 97.1 when broad groups by education of head of family (no more than elementary school, some high school, some college) were compared, and when single years of schooling was examined, the range was from 92.1 to 100.0 percent.

The differentials which were observed in the demographic or socioeconomic subgroups, though relatively small, were generally in the expected direction. Thus the response rate, though high everywhere, was even higher in the rural areas and smaller towns than in the large metropolitan centers. It was lower in the northeastern part of the United States than in other regions. The non-white group had a higher rate of participation than the white sample children, and the response rate was a little better for all boys than for all girls. All of these differences are in the same directions as the larger differences which prevailed in the adult examination program of Cycle I. The differentials pertaining to income and education in Cycle II did not present an entirely consistent pattern throughout the range. The highest income group (\$15,000 and over), however, had the poorest record of cooperation, and the lowest income group (under \$3,000) had the highest response rate. The intermediate groups were all roughly equal. This is generally similar to the Cycle I results. When education of head of family was the variable examined, it appeared that response was highest among children whose parents had no more than elementary school education and response was poorest among persons with 5 years or more of college or with 1-3 (but not 4) years of college completed. (Persons with 4 years of college had a higher level of cooperation than the foregoing two groups though lower than that for the elementary level only.)

Reasons for Sample Persons

Not Cooperating

Only 298 of the 7,417 children who were selected in the survey sample were not examined. Even though the foregoing section has indicated that this level of nonresponse was probably not particularly biasing insofar as analysis of the data by various demographic subgroups goes, it is still of considerable interest to investigate the reason for lack of cooperation on the part of this 4 percent of the sample. The interest comes partly from needing to understand nonresponse to plan to minimize it in other surveys. An added importance of understanding the character of the nonresponse in the children's survey is the light it may shed on possible biases in particular elements of the examination collected. Thus, even though the number of noncooperating children is so small as to have negligible effect on most distributions, it might have an effect on some particular item in the data collected if reasons for noncooperation were frequently related to that item.

The survey operating procedures were such that if there was any opposition to participation in the examination, it usually became manifest at the time the health examination representative explained the full plan and asked for the signed consent. In a very small number of cases the Census interviewer during the earlier visit may have met with some indication of uncooperativeness, but in any case the decision to participate in the examination was not called for until the second visit referred to above. An appointment record card, completed immediately after, the visit, included comments concerning the reasons given for reluctance to participate in cases where there were any. The survey operations usually involved some further contacts with such a household in an effort to explain more fully the nature of the program and gain cooperation. In each of the successive visits or other contacts (which may have involved different staff members), records were completed concerning the appointment process. These entries included not only any stated reasons for unwillingness to participate but also any relevant judgments by the staff member as to factors that might be involved.

Table 5. Number and percent of children not participating and reasons given: Health Examination Survey, 1963-65

| Reason for not participating | Number of children | Percent |
|--|--------------------|---------|
| All reasons----- | 298 | 100.0 |
| Unable to assign any reason----- | 44 | 14.8 |
| Reasons unrelated to potential examination findings----- | 145 | 48.6 |
| Temporarily out of the area----- | 39 | --- |
| Parent opposed to such Federal activity----- | 42 | --- |
| Private medical care sufficient----- | 33 | --- |
| Schedule too filled to find time----- | 31 | --- |
| Other reasons----- | 109 | 36.6 |
| Illness of child----- | 17 | --- |
| Child or parent fearful of doctors----- | 26 | --- |
| Child generally uncooperative----- | 27 | --- |
| Parental concern for child's welfare----- | 15 | --- |
| Illness or death of family member----- | 8 | --- |
| Examination started but not completed----- | 8 | --- |
| Religious objection to medical examination---- | 8 | --- |

The information available for the 298 unexamined children was first classified into about a hundred separate "reason" categories, and then these were combined by grouping essentially similar statements of reasons. (If several reasons were listed, the one which seemed to be the main obstacle was used.) The 12 categories finally arrived at are shown in table 5. These were grouped into three general classes: "Unable to assign any reason" (44), "Reasons unrelated to potential examination findings" (145), and "Other reasons" (109). It is not implied that inclusion in the last category means that the case is necessarily typical with regard to what the examination findings would have been, but only that it is possible that some of the cases in that category may have been atypical with respect to some aspect of the examination. Thus some of the cases not examined because of "illness of child" represent cases of the usual acute communicable diseases of childhood which happened to occur at a time which prevented the child from being examined; some on the other hand represent children whose illness was chronic and who were therefore unlike the examined group.

For about one-fourth of the cases of "Unable to assign any reason," the survey records failed to show a reason. In some cases this was a lost or incomplete administrative record; in others the parent simply refused to give any reason and the survey staff had no basis for inferring what was back of the refusal. In another one-fourth of the cases the lack of cooperation was attributed to objections (unknown as to grounds) on the part of some third party—neither the parent nor the child. Thus an individual would not cooperate because "one of his friends" advised him not to do so. The remaining half of this unknown reason group represents cases where the record showed a variety of miscellaneous reasons which were obscure and unclassifiable in terms of the categories shown above or any other clearly meaningful categories.

The reasons which were presumed to be unrelated to any possible findings of the examination (had it been made) are partially explained by the four subcategories shown in the tabulation. There were 39 instances when either the entire family or the sample child were out of the area at the time for examination, some for such

The survey records, then, on each of the 298 persons who were in the sample but were not examined should include one or more statements concerning the reason for nonparticipation. In over half the cases there was more than one reason listed. It is recognized that in some cases the reason given may not be the real reason. The health examination representative and the field operations manager were highly skilled, however, in the art of obtaining cooperation and this required that they be able to assess correctly the factors that were involved. Their appraisals as to the reason most likely to be really involved have been taken into account in this analysis.

reasons as vacation trips and summer camp periods. There were a number of instances where it was clear that the major reason for refusal was a negative attitude toward the Federal Government--either the Administration or the Federal Government's participation in such activities as the Health Examination Survey. In some other cases where such points were raised, the health examination representative was successful in explaining the research nature of the program, the bipartisan basis for the original legislation authorizing the surveys, and the appropriateness of the activity. For 42 of the 298 nonrespondents, however, this attitude remained a barrier to participation. The "private medical care sufficient" category included such cases as ones where the parent insisted that because their child received regular and complete care from a private physician the examination was unnecessary. The schedule-filled group included some instances where the child was scheduled for examination but other activities resulted in a broken appointment and there was insufficient time for re-scheduling.

The category labeled "Other reasons" in table 5 includes 109 unexamined sample children where the basis for the refusal was one which might have some relationship to one or more of the kinds of information gathered by the survey program. Thus since the survey includes some behavioral items designed to get at the social adjustment of the child, it is important to be aware of the fact that a number of sample children were not included by reason of the apprehensiveness they or their parents had about examination by a strange doctor. In much of the information collected by the survey, such a child might not be at all different from other sample children, but on the specific questions asked about behavior he might well be atypical. This needs to be taken into account in later analysis of data.

In summary, then, it is believed that the degree of cooperation achieved in the survey was so high that the problem presented by nonresponse is minimal. At the same time it is recognized that the person on whom no data are available always presents the possibility of being unlike the others on whom data were collected and the analyst must always be aware of the possibility of bias.

REFERENCES

¹National Center for Health Statistics: Origin, program, and operation of the U.S. National Health Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 1. Public Health Service. Washington. U.S. Government Printing Office, Aug. 1963.

²National Center for Health Statistics: Plan and initial program of the Health Examination Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 4. Public Health Service. Washington. U.S. Government Printing Office, July 1965.

³U.S. National Health Survey: A study of special purpose medical-history techniques. *Health Statistics*. PHS Pub. No. 584-D1. Public Health Service. Washington. U.S. Government Printing Office, Jan. 1960.

⁴U.S. National Health Survey: Attitudes toward cooperation in a health examination survey. *Health Statistics*. PHS Pub. No. 584-D6. Public Health Service. Washington. U.S. Government Printing Office, July 1961.

⁵U.S. National Health Survey: Evaluation of a single-visit cardiovascular examination. *Health Statistics*. PHS Pub. No. 584-D7. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1961.

⁶National Center for Health Statistics: Comparison of two vision-testing devices. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 1. Public Health Service. Washington. U.S. Government Printing Office, June 1963.

⁷National Center for Health Statistics: The one-hour oral glucose tolerance test. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 3. Public Health Service. Washington. U.S. Government Printing Office, July 1963.

⁸National Center for Health Statistics: Cooperation in health examination surveys. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 9. Public Health Service. Washington. U.S. Government Printing Office, July 1965.

⁹National Center for Health Statistics: Replication, an approach to the analysis of data from complex surveys. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 14. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1966.

¹⁰National Center for Health Statistics: Three views of hypertension and heart disease. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 22. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1967.

¹¹National Center for Health Statistics: Cycle I of the Health Examination Survey, sample and response. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 1. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1964.

¹²National Center for Health Statistics: Glucose tolerance of adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 2. Public Health Service. Washington. U.S. Government Printing Office, May 1964.

¹³National Center for Health Statistics: Binocular visual acuity of adults, United States, 1960-1962. *Vital and Health*

Statistics. PHS Pub. No. 1000-Series 11-No. 3. Public Health Service. Washington. U.S. Government Printing Office, June 1964.

¹⁴**National Center for Health Statistics:** Blood pressure of adults by age and sex, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 4. Public Health Service. Washington. U.S. Government Printing Office, June 1964.

¹⁵**National Center for Health Statistics:** Blood pressure of adults by race and area, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 5. Public Health Service. Washington. U.S. Government Printing Office, July 1964.

¹⁶**National Center for Health Statistics:** Heart disease in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 6. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1964.

¹⁷**National Center for Health Statistics:** Selected dental findings in adults by age, race, and sex, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 7. Public Health Service. Washington. U.S. Government Printing Office, Feb. 1965.

¹⁸**National Center for Health Statistics:** Weight, height, and selected body dimensions of adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 8. Public Health Service. Washington. U.S. Government Printing Office, June 1965.

¹⁹**National Center for Health Statistics:** Findings on the serologic test for syphilis in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 9. Public Health Service. Washington. U.S. Government Printing Office, June 1965.

²⁰**National Center for Health Statistics:** Coronary heart disease in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 10. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1965.

²¹**National Center for Health Statistics:** Hearing levels of adults by age and sex, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 11. Public Health Service. Washington. U.S. Government Printing Office, Oct. 1965.

²²**National Center for Health Statistics:** Periodontal disease in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 12. Public Health Service. Washington. U.S. Government Printing Office, Nov. 1965.

²³**National Center for Health Statistics:** Hypertension and hypertensive heart disease in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 13. Public Health Service. Washington. U.S. Government Printing Office, May 1966.

²⁴**National Center for Health Statistics:** Weight by height and age of adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 14. Public Health Service. Washington. U.S. Government Printing Office, May 1966.

²⁵**National Center for Health Statistics:** Prevalence of osteoarthritis in adults by age, sex, race, and geographic area,

United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 15. Public Health Service. Washington. U.S. Government Printing Office, June 1966.

²⁶**National Center for Health Statistics:** Oral hygiene in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 16. Public Health Service. Washington. U.S. Government Printing Office, June 1966.

²⁷**National Center for Health Statistics:** Rheumatoid arthritis in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 17. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1966.

²⁸**National Center for Health Statistics:** Blood glucose levels in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 18. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1966.

²⁹**National Center for Health Statistics:** Age at menopause, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 19. Public Health Service. Washington. U.S. Government Printing Office, Oct. 1966.

³⁰**National Center for Health Statistics:** Osteoarthritis in adults by selected demographic characteristics, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 20. Public Health Service. Washington. U.S. Government Printing Office, Nov. 1966.

"National Center for Health Statistics: Childbearing and diabetes mellitus, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 21. Public Health Service. Washington. U.S. Government Printing Office, Nov. 1966.

³²**National Center for Health Statistics:** Serum cholesterol levels of adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 22. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1967.

³³**National Center for Health Statistics:** Decayed, missing, and filled teeth in adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 23. Public Health Service. Washington. U.S. Government Printing Office, Feb. 1967.

³⁴**National Center for Health Statistics:** Mean blood hematocrit of adults, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 24. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1967.

³⁵**National Center for Health Statistics:** Binocular visual acuity of adults by region and selected demographic characteristics, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 25. Public Health Service. Washington. U.S. Government Printing Office, June 1967.

³⁶**National Center for Health Statistics:** Evaluation of psychological measures used in the health examination survey of children ages 6-11. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 2-No. 15. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1966.

APPENDIX I, SELECTED FORMS USED IN CYCLE II

APPENDIX I A

| | | | | | | | | | | | |
|---|---|--|-------------------------|---|-------|---|-------|----------|-------|---|-------|
| CONFIDENTIAL - The National Health Survey is authorized by Public Law 652 of the 84th Congress (70 Stat. 489; 42 U.S.C. 305). All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to others for any other purposes (22 FR 1687). | | BUDGET BUREAU NO. 68-R620-S4.5 APPROVAL EXPIRES JULY 31, 1965 | | | | | | | | | |
| FORM NHS-HES-2 1-13-63 | | U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS ACTING AS COLLECTING AGENT FOR THE U.S. PUBLIC HEALTH SERVICE | | | | | | | | | |
| NATIONAL HEALTH SURVEY | | 1. Questionnaire _____ of _____ Questionnaires | | | | | | | | | |
| 2. (a) Address or description of location (include city, zone, and State) | | 3. Identification code | 4. PSU number | | | | | | | | |
| 2. (b) Mailing address if not shown in 2(a) OR <input type="checkbox"/> Same as shown in 2(a) | | 5. Segment number | | | | | | | | | |
| 2. (c) Name of special dwelling place | | 6. Serial number | | | | | | | | | |
| Code | | If this questionnaire is for an "EXTRA" unit in a B or NTA Segment enter: | | | | | | | | | |
| | | Serial No. of original Sample Unit | Item No. by which found | | | | | | | | |
| | | If in NTA Segment, also enter for FIRST unit listed on property | | | | | | | | | |
| | | Segment List | | | | | | | | | |
| | | Sheet No. | Line No. | | | | | | | | |
| 7. Type of living quarters (Check one box) | | <input type="checkbox"/> Housing unit <input type="checkbox"/> Other unit | | | | | | | | | |
| L Ask items 8 and 9 only if "Rural" box is marked 1 <input type="checkbox"/> Rural 2 <input type="checkbox"/> All other (Skip to Item 10) | | ALL segments (ask if Item 2(a) address identifies a SINGLE-UNIT structure). | | | | | | | | | |
| 8. Do you own or rent this place? 1 <input type="checkbox"/> Own (ASK 9(a)) 2 <input type="checkbox"/> Rent (ASK 9(b)) 3 <input type="checkbox"/> Rent free (ASK 9(a)) | | 10. Are there any occupied or vacant living quarters BESIDES YOUR OWN.. | | | | | | | | | |
| 9. (a) If Own or Rent free, ask - Does this place have 10 or more acres? (b) If Rent, ask - Does the place you rent have 10 or more acres? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No | | -- In the basement? <input type="checkbox"/> Yes--S _____ L _____ <input type="checkbox"/> No -- on this floor? <input type="checkbox"/> Yes--S _____ L _____ <input type="checkbox"/> No -- on any other floor of this building? <input type="checkbox"/> Yes--S _____ L _____ <input type="checkbox"/> No (Fill Table X for each quarters NOT listed) | | | | | | | | | |
| (c) During the past 12 months did soles of crops, livestock, and other farm products from the place amount to \$50 or more? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No | | 11. Are there any occupied or vacant living quarters BESIDES YOUR OWN .. If Item 2(a) identifies entire floor } -- on this floor? } <input type="checkbox"/> Yes --S _____ L _____ <input type="checkbox"/> No If Item 2(a) identifies part of the floor, } (Fill Table X for each quarters NOT listed.) specify part } -- in the -- of this floor? } | | | | | | | | | |
| (d) During the past 12 months did soles of crops, livestock, and other farm products from the place amount to \$250 or more? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No | | TA and NTA segments (ask at all units EXCEPT APARTMENT HOUSES), 12. Is there any other building on this property for people to live in - either occupied or vacant? <input type="checkbox"/> Yes--S _____ L _____ <input type="checkbox"/> No (Fill Table X for each quarters NOT listed.) | | | | | | | | | |
| (INTERVIEWER): If eligible child in household enter child's name, segment, serial, and column number on Medical History Form. (READ TO RESPONDENT) In addition to the information you have already given me, I would like to leave this form to be filled out about . . . The form is self-explanatory. A representative of the U.S. Public Health Service will come by to pick up the form in a week or so. (Ask Item 14) | | 13. What is the telephone number here? Telephone No. _____ OR <input type="checkbox"/> No telephone | | | | | | | | | |
| 14. What would be the best time of day for the representative to come? | | Medical histories left for-- Person with whom form left-- Column No(s). Column No. and relationship | | | | | | | | | |
| 15. RECORD OF CALLS AT HOUSEHOLD | | | | | | | | | | | |
| Item | Date | 1 | Corn. | 2 | Corn. | 3 | Corn. | 4 | Corn. | 5 | Corn. |
| Entire household | Time | | | | | | | | | | |
| 16. REASON FOR NON-INTERVIEW | | | | | | | | | | | |
| TYPE | A | B | | C | | Z | | | | | |
| Reason: | <input type="checkbox"/> Refusal (Describe in footnotes) <input type="checkbox"/> No one at home--repeated calls (Go to 17) <input type="checkbox"/> Temporarily absent <input type="checkbox"/> Other (Specify) I | <input type="checkbox"/> Vacant -- non-seasonal <input type="checkbox"/> Vacant -- seasonal <input type="checkbox"/> Usual residence elsewhere <input type="checkbox"/> Other (Specify) | | <input type="checkbox"/> Demolished <input type="checkbox"/> In sample by mistake <input type="checkbox"/> Eliminated in sub-sample <input type="checkbox"/> Other (Specify) | | Interview not obtained for Cols. _____ because: | | | | | |
| 17. TYPE A FOLLOW-UP PROCEDURE If final call results in a Type A non-interview (except Refusals) take the following steps: 1. Contact neighbors (caretakers, etc.) until you find someone who knows the family; 2. Find out the number of people in the household, their names and approximate ages; if names of all members not known, ascertain relationships. Record this information in the regular spaces inside the questionnaire. | | | | 18. Signature of interviewee | | | | 19. Code | | | |

| | | | | | | | | | | | | | | |
|---|-----|------|---|-----|------|---|-----|------|---|-----|------|---|-----|------|
| Last name ② | | | Last name ③ | | | Last name ④ | | | Last name ⑤ | | | Last name ⑥ | | |
| First name | | | First name | | | First name | | | First name | | | First name | | |
| Relationship | | | Relationship | | | Relationship | | | Relationship | | | Relationship | | |
| <input type="checkbox"/> White <input type="checkbox"/> Negro <input type="checkbox"/> Other | | | <input type="checkbox"/> White <input type="checkbox"/> Negro <input type="checkbox"/> Other | | | <input type="checkbox"/> White <input type="checkbox"/> Negro <input type="checkbox"/> Other | | | <input type="checkbox"/> White <input type="checkbox"/> Negro <input type="checkbox"/> Other | | | <input type="checkbox"/> White <input type="checkbox"/> Negro <input type="checkbox"/> Other | | |
| <input type="checkbox"/> Male <input type="checkbox"/> Female | | | <input type="checkbox"/> Male <input type="checkbox"/> Female | | | <input type="checkbox"/> Male <input type="checkbox"/> Female | | | <input type="checkbox"/> Male <input type="checkbox"/> Female | | | <input type="checkbox"/> Male <input type="checkbox"/> Female | | |
| Age <input type="checkbox"/> Under 1 year | | | Age <input type="checkbox"/> Under 1 year | | | Age <input type="checkbox"/> Under 1 year | | | Age <input type="checkbox"/> Under 1 year | | | Age <input type="checkbox"/> Under 1 year | | |
| Month | Day | Year |
| <input type="checkbox"/> EC <input type="checkbox"/> Not EC | | | <input type="checkbox"/> EC <input type="checkbox"/> Not EC | | | <input type="checkbox"/> EC <input type="checkbox"/> Not EC | | | <input type="checkbox"/> EC <input type="checkbox"/> Not EC | | | <input type="checkbox"/> EC <input type="checkbox"/> Not EC | | |
| <input type="checkbox"/> No school | | | <input type="checkbox"/> No school | | | <input type="checkbox"/> No school | | | <input type="checkbox"/> No school | | | <input type="checkbox"/> No school | | |
| Name and location | | | Name and location | | | Name and location | | | Name and location | | | Name and location | | |
| Grade | | | Grade | | | Grade | | | Grade | | | Grade | | |
| <input type="checkbox"/> U.S. | | | <input type="checkbox"/> U.S. | | | <input type="checkbox"/> U.S. | | | <input type="checkbox"/> U.S. | | | <input type="checkbox"/> U.S. | | |
| Foreign country | | | Foreign country | | | Foreign country | | | Foreign country | | | Foreign country | | |
| <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both | | | <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both | | | <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both | | | <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both | | | <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both | | |
| <input type="checkbox"/> None Elem... 1 2 3 4 5 6 7 8 High... 1 2 3 4 College 1 2 3 4 5+ | | | <input type="checkbox"/> None Elem... 1 2 3 4 5 6 7 8 High... 1 2 3 4 College 1 2 3 4 5+ | | | <input type="checkbox"/> None Elem... 1 2 3 4 5 6 7 8 High... 1 2 3 4 College 1 2 3 4 5+ | | | <input type="checkbox"/> None Elem... 1 2 3 4 5 6 7 8 High... 1 2 3 4 College 1 2 3 4 St | | | <input type="checkbox"/> None Elem... 1 2 3 4 5 6 7 8 High... 1 2 3 4 College 1 2 3 4 5+ | | |
| <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| <input type="checkbox"/> Working <input type="checkbox"/> Keeping house <input type="checkbox"/> Something else | | | <input type="checkbox"/> Working <input type="checkbox"/> Keeping house <input type="checkbox"/> Something else | | | <input type="checkbox"/> Working <input type="checkbox"/> Keeping house <input type="checkbox"/> Something else | | | <input type="checkbox"/> Working <input type="checkbox"/> Keeping house <input type="checkbox"/> Something else | | | <input type="checkbox"/> Working <input type="checkbox"/> Keeping house <input type="checkbox"/> Something else | | |
| <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| <input type="checkbox"/> Full-time <input type="checkbox"/> Part-time | | | <input type="checkbox"/> Full-time <input type="checkbox"/> Part-time | | | <input type="checkbox"/> Full-time <input type="checkbox"/> Part-time | | | <input type="checkbox"/> Full-time <input type="checkbox"/> Part-time | | | <input type="checkbox"/> Full-time <input type="checkbox"/> Part-time | | |
| <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Separated | | | <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Separated | | | <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Separated | | | <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Separated | | | <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Separated | | |
| <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Age | | | Age | | | Age | | | Age | | | Age | | |
| Present whereabouts | | | Present whereabouts | | | Present whereabouts | | | Present whereabouts | | | Present whereabouts | | |
| Name | | | Relationship | | | Year(s) | | | Name of Institution | | | Name of Institution | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Group | | | Group | | | Group | | | Group | | | Group | | |

15. Is any language other than English spoken here in your home?

Yes

No

(If "Yes," ask):

What language(s)?

Language(s) spoken _____

(Complete front page of questionnaire)

Comments: (Include here any information which might be useful to the PHS representative when she calls to pick up the Medical History Form.)

| TABLE X - LIVING QUARTERS DETERMINATIONS AT LISTED ADDRESS | | | | | | | | | | | | | |
|--|-------------------|--|------|---|--|--|---|------|--|---|---------------------|--|------|
| 3 Line No. | Questionnaire No. | Are these (Specify location) quarters for more than one group of people? | | Location of unit (Examples: Basement, 2nd floor, etc.) a | USE OF CHARACTERISTICS | | | | CLASSIFICATION | | It: HU IN B (10) | SEGMENT, ASK (If before July 1960) What was the name of the household head of these quarters on April 1, 1960? (11) | |
| | | Yes | No | | Occupied | | All Quarters | | Not a separate unit (Add occupants to this questionnaire) | Fill separate questionnaire and interview | | | |
| | | (3a) | (3b) | | Do the occupants of these (Specify location) quarters live and eat with any other group of people? | Direct access from outside or through a common hall? | A kitchen with outside cooking equipment for exclusive use? | Yes | | | | | No |
| (1) | (2) | (3a) | (3b) | (4) | (5a) | (5b) | (6a) | (6b) | (7a) | (7b) | (8) | (9a) | (9b) |
| 1 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |

FORM NHS-HES-2a
(9-14-63)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
ACTING AS COLLECTING AGENT FOR THE
U.S. PUBLIC HEALTH SERVICE

NATIONAL HEALTH SURVEY

Please look at the questions on this card.
Mark (x) "Yes" or "No" for each one listed.

1. During the past ten years has anyone in the family been in a hospital, institution or any other similar place for more than a three-month consecutive period?

Yes c | No

2. During the past ten years has anyone in the family been confined to bed at home for more than a three-month consecutive period?

Yes c | No

3. During the past ten years has anyone in the family been unable to work or carry on his usual activities for more than a six-month period—that is, in terms of health?

Yes c | No

4. During the past ten years has any relative of yours died while living in your household?

c | Yes c | No

FOR CENSUS BUREAU USE ONLY

| | | |
|---------|-------------|------------|
| PSU No. | Segment No. | Serial No. |
|---------|-------------|------------|

FORM NHS-HES-2b
(6-14-63)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
ACTING AS COLLECTING AGENT FOR THE
U.S. PUBLIC HEALTH SERVICE

NATIONAL HEALTH SURVEY

Total combined family income during part 12 months

Group A . . . Under \$500 (Including loss)

Group B . . . \$ 500 - \$ 999

Group C . . . \$1,000 - \$ 1,999

Group D . . . \$ 2,000 - \$ 2,999

Group E . . . \$3,000 - \$ 3,999

Group F . . . \$4,000 - \$ 4,999

Group G . . . \$5,000 - \$ 6,999

Group H . . . \$7,000 - \$ 9,999

Group I . . . \$10,000-\$14,999

Group J . . . \$15,000 and over

APPENDIX 1B

CONFIDENTIAL - The National Health Survey is authorized by Public Law 652 of the 84th Congress (70 Stat. 489; 42 U.S.C. 242c). All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to others for any other purposes (22 FR 1687).

FORM APPROVED
BUDGET BUREAU NO. 68-R620-84.6

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH-SERVICE
NATIONAL HEALTH SURVEY

HES-256

(10) EI _____

CHILD'S MEDICAL HISTORY - Parent

| | | | |
|-------------------------------------|---------|--------|----------|
| NAME OF CHILD (Last, First, Middle) | SEGMENT | SERIAL | COL. NO. |
| (6-11) | | | |

NOTE: Please complete this form by checking the correct boxes and/or filling in the blanks where applicable.

When you have, completed it, keep it until the representative of the Health Examination Survey calls on you within a few days. If there are some questions you do not understand, please complete the others and the person who comes for the form will help you with the ones that were unclear.

| | | |
|--|--------|---|
| 1. SEX 1 <input type="checkbox"/> Male 2 <input type="checkbox"/> Female | 2. AGE | 2. DATE OF BIRTH (Month, Day, Year) |
| 4. PLACE OF BIRTH (City or Town, State) | | 5. WAS THIS CHILD BORN IN A HOSPITAL? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know |

IF YES: (Question 5)

A. About how long did you (the mother) stay in the hospital after the baby was born?

1 1 week or less 2 1 to 2 weeks 3 Over 2 weeks 4 Don't know

B. If mother stayed **over** 1 week, what was the reason for staying that long?

C. About how long did the baby stay in the hospital?

1 1 week or less 2 1-2 weeks 3 Over 2 weeks 4 Don't know

D. If the baby stayed **over** 1 week, what was the reason for staying that long?

6. ABOUT HOW MANY POUNDS DID THE BABY WEIGH AT BIRTH?

1 Under 5 2 5-10 3 Over 10 4 Don't know

7. WAS THE BABY BORN ABOUT WHEN HE(SHE) WAS EXPECTED, OR EARLIER, OR LATER?

1 Earlier than expected 2 When expected 3 Later 4 Don't know

If the baby was born **earlier** than expected, about how early?

1 Less than 4 weeks early 2 4 or more weeks early 3 Don't know

6. WAS THERE ANYTHING UNUSUAL OR WAS ANYTHING WRONG WITH THE BABY WHEN HE(SHE) WAS BORN?

1 Yes 2 No 3 Don't know

IF YES:

A. What was the matter?

B. What did the doctor say caused this?

9. WHILE YOU (THE MOTHER) WERE PREGNANT WITH THIS CHILD DID YOU HAVE ANY MEDICAL PROBLEMS OR COMPLICATIONS?

1 Yes 2 No 3 Don't know

IF YES, what kind of trouble did you have?

10. HOW MANY TIMES HAD YOU (THE MOTHER) BEEN PREGNANT BEFORE, INCLUDING PREVIOUS MISCARRIAGES AS WELL AS DELIVERIES?

1 Yes 2 No 3 Don't know

IF YES:

A. About how many months pregnant were you when you first saw a doctor?
1 Less than 3 2 3 to 6 3 Over 6 4 Don't know

B. About how many times altogether did you see a doctor while you (the mother) were pregnant?
1 None 2 1 to 3 3 4 or more 4 Don't know

- (27) 12. DID YOU (THE MOTHER) HAVE ANY TROUBLE WITH **THE PREGNANCY** OR BIRTH **OF THIS CHILD?**
 1 Yes 2 No 3 Don't know
 IF YES, what was the trouble? _____

-
13. WHEN **HE(SHE)** WAS A BABY, THAT IS BEFORE HE WAS A YEAR OLD, WOULD YOU SAY HE WAS **IN GOOD** HEALTH, IN FAIR OR POOR HEALTH?
 1 Good health 2 Fair health 3 Poor health 4 Don't know
14. WAS THERE ANYTHING WRONG WITH **HIM(HER)** WHEN **HE(SHE)** WAS A BABY?
 1 Yes 2 No 3 Don't know
 A. If the baby was not in good health or had anything wrong, what was the trouble?---,---.

- (30) B. Did you see a doctor about it?
 1 Yes 2 No 3 Don't know
 C. IF YES, did he say what caused the trouble? _____

-
15. WAS THE CHILD BREAST FED?
 1 Yes 2 No 3 Don't know
 A. IF YES, for about how many months was he(she) breast fed?
 1 Less than 1 2 1 to 6 3 Over 6 4 Don't know
 B. When breast feeding was stopped, how easily did the baby accept the change?
 1 No problem 2 Some problem 3 Considerable problem
-
- (34) 16. ABOUT HOW OLD WAS THE CHILD WHEN **HE(SHE)** FIRST WALKED BY HIMSELF?
 1 Under 1 year old 2 Between 1 and 1½ years old
 3 Over 1½ years old 4 Don't know
17. ABOUT HOW OLD WAS THE CHILD **WHEN HE(SHE)** SPOKE HIS FIRST REAL WORD?
 1 Under 1 year old 2 Between 1 and 1½ years old
 3 Over 1½ years old 4 Don't know
-
- (36) 18. CHILDREN **LEARN TO** 'DO THINGS **LIKE EATING** BY THEMSELVES AND TALKING AT DIFFERENT AGES. DO YOU THINK THIS CHILD WAS ESPECIALLY **FAST** IN LEARNING TO DO THINGS, ABOUT **AVERAGE**, OR SOMEWHAT **SLOWER** THAN OTHER CHILDREN?
 1 Faster than other children 2 About the same 3 Slower 4 Don't know
-
- (37) 19. DID **HE(SHE)** GO TO KINDERGARTEN OR NURSERY SCHOOL BEFORE ENTERING THE FIRST GRADE?
 1 Yes 2 No 3 Don't know
-
20. NOW TURNING TO THE PRESENT TIME. HOW WOULD YOU **DESCRIBE** THE CHILD'S HEALTH NOW?
 1 Very good 2 Good 3 Fair 4 Poor
 IF FAIR or POOR, what is the trouble? _____

-
21. IS THERE ANYTHING ABOUT **HIS(HER)** HEALTH THAT BOTHERS **YOU** OR WORRIES YOU **NOW?**
 1 Yes 2 No
 IF YES, what is the trouble? _____

-
- (40) 22. DOES THE CHILD AT PRESENT EVER SUCK **HIS(HER)** THUMB. OR FINGERS, EITHER DURING THE DAY OR AT NIGHT?
 1 Yes 2 No 3 Don't know
 IF YES, about how often?
 1 Almost every day or night 2 Just once in a while 3 Don't know
-
- (42) 23. DOES THE CHILD TAKE ANY MEDICINE REGULARLY, NOT COUNTING VITAMINS?
 1 Yes 2 No 3 Don't know
 IF YES:
 A. What is the medicine for? _____

 B.. What is the name of the medicine?

-
- (43) C. Did a doctor say for him (her) to take it?
 1 Yes 2 No 3 Don't know
-
24. AT THE PRESENT **TIME** DOES THE CHILD EVER WET THE BED?
 1 Yes 2 No 3 Don't know
 IF YES, about how often does this happen?
 1 Several times a week 2 Not every week but several times a month
 3 About once a month 4 Less often than once a month
-
- Here are a few questions about any accidents or injuries the child may have had from the time he was a baby to today.
25. HAS **HE(SHE)** EVER BROKEN ANY BONES?
 1 Yes 2 No 3 Don't know
-

26. HAS **HE(SHE)** EVER BEEN KNOCKED UNCONSCIOUS?
 1 Yes 2 No 3 Don't know
 IF DON'T KNOW, do you **have** any reason to think **he(she)** may have been? _____

27. HAS **HE(SHE)** EVER BEEN BURNED SO BADLY **THAT IT** LEFT A SCAR?
 1 Yes 2 No 3 Don't know

28. HAS **HE(SHE)** EVER HAD ANY OTHER **ACCIDENT** OR INJURY THAT TROUBLED HIM QUITE A BIT?
 1 Yes 2 No 3 Don't know

(60) 29. HOW ABOUT OPERATIONS: HAS **HE(SHE)** HAD **HIS(HER)** TONSIL'S TAKEN OUT?
 1 Yes 2 No 3 Don't know

(61) 30. HAS **HE(SHE)** HAD ANY OTHER KIND OF OPERATION?
 1 Yes 2 No 3 Don't know
 IF YES, what was the operation and what was it for? _____

31. HAS **HE(SHE)** EVER BEEN IN THE HOSPITAL FOR ANY OTHER SICKNESS OR TROUBLE?
 1 Yes 2 No 3 Don't know
 IF YES, what was the sickness or trouble? _____

32. HERE IS A LIST OF DISEASES THAT CHILDREN SOMETIMES HAVE. HAS THIS CHILD EVER HAD:
 If yes, about how old at the time?

| | | | | |
|------|-------------------------------------|--|-------------------------------|---------------------------------------|
| (63) | A. Scarlet fever? | 1 <input type="checkbox"/> Yes → A g e . | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| (64) | B. Rheumatic fever? | 1 <input type="checkbox"/> Yes → A g e - | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | C. Polio? | 1 <input type="checkbox"/> Yes → A g e - | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | D. Diphtheria? | 1 <input type="checkbox"/> Yes + Age _____ | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | E. Meningitis or sleeping sickness? | 1 <input type="checkbox"/> Yes → Age _____ | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | F. Tuberculosis? | 1 <input type="checkbox"/> Yes → Age . + , | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | G. Diabetes or sugar diabetes? | 1 <input type="checkbox"/> Yes + Age _____ | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | H. Epilepsy? | 1 <input type="checkbox"/> Yes → Age _____ | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | I. Chorea or St. Vitus dance? | 1 <input type="checkbox"/> Yes → Age _____ | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| | J. Cerebral palsy? | 1 <input type="checkbox"/> Yes → A g e | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |
| (63) | K. Whooping cough? | 1 <input type="checkbox"/> Yes + Age _____ | 2 <input type="checkbox"/> No | 3 <input type="checkbox"/> Don't know |

(64) 33. HAS THIS CHILD EVER HAD MEASLES?
 1 Yes 2 No 3 Don't know
 IF YES:
 A. A t w h a t a g e ?
 B. Was he(she) sick longer than usual?
 1 Yes 2 No 3 Don't know
 C. Did he(she) have to go to the hospital?
 1 Yes 2 No 3 Don't know
 D. Did he(she) have a high fever for more **than** one week?
 1 Yes 2 No 3 Don't know
 E. Did he(she) seem to be unusually drowsy (sleepy) after the illness?
 1 Yes 2 No 3 Don't know

(69) 34. HAS THIS CHILD EVER HAD MUMPS?
 1 Yes 2 No 3 Don't know
 IF YES:
 A. A t w h a t a g e ?
 B. Was he(she) sick longer than usual?
 1 Yes 2 No 3 Don't know
 C. Did he(she) have to go to the hospital?
 1 Yes 2 No 3 Don't know
 D. Did he(she) have a high fever for more **than one week**?
 1 Yes 2 No 3 Don't know
 E. Did he(she) seem to be unusually drowsy (sleepy) **after the illness**?
 1 Yes 2 No 3 Don't know

(1-8) #

(79-80) END CARD 01

35. HERE ARE SOME OTHER KINDS OF ILLNESSES OR CONDITIONS **SOME** CHILDREN HAVE. HAS YOUR CHILD EVER HAD:

(6) A. Asthma? 1 Yes 2 No 3 Don't know
 B. Hay fever? 1 Yes 2 No 3 Don't know
 C. Any other kinds of allergies? 1 Yes 2 No 3 Don't know
 D. Any trouble with his (her) kidneys? 1 Yes 2 No 3 Don't know
 E. A heart murmur? 1 Yes 2 No 3 Don't know
 F. Anything wrong with his(her) heart? 1 Yes 2 No 3 Don't know
 G. A convulsion? 1 Yes 2 No 3 Don't know
 H. A fit? 1 Yes 2 No 3 Don't know

35. DOES YOUR CHILD OFTEN HAVE BAD SORE THROATS?
 (14) 1 Yes 2 No 3 Don't know

37. IN THE PAST YEAR OR SO HAS **HE(SHE)** HAD MORE THAN THREE COLDS A YEAR?
 1 Yes 2 No 3 Don't know

36. DOES **HE(SHE)** OFTEN HAVE COUGHS THAT HANG **ON**?
 1 Yes 2 No 3 Don't know

39. HAS A DOCTOR EVER SAID **THAT HE(SHE)** HAS BRONCHITIS?
 1 Yes 2 No 3 Don't know

40. WHEN THE CHILD HAS A COUGH OR COLD DOES IT GO TO **HIS(HER)** CHEST?
 1 Often 2 Sometimes 3 Almost never 4 Don't know

41. HERE ARE SOME QUESTIONS ABOUT YOUR CHILD'S EYES.

(19) A. Has he(she) ever had crossed eyes?
 1 Yes 2 No 3 Don't know

(20) B. Has he(she) ever had an operation on his(her) eyes?
 1 Yes 2 No 3 Don't know

IF YES, what was it for? _____

C. Has he(she) ever had other trouble with his(her) eyes?
 1 Yes 2 No 3 Don't know

IF YES, what kind of trouble? _____

D. Does he(she) wear either glasses or contact lenses?
 1 Yes 2 No 3 Don't know

42. IF **HE(SHE)** DOES NOT WEAR GLASSES:

(28) A. Does **he(she) ever** have trouble reading or doing fine work?
 1 Yes 2 No 3 Don't know

B. Do **his(her)** eyes or eyelids ever swell up or get red?
 1 Yes 2 No 3 Don't know

C. Does he(she) ever have styes, infections, or 'matter' in **his(her)** eyes?
 1 Yes 2 No 3 Don't know

D. Do his(her) eyes often water?
 1 Yes 2 No 3 Don't know

E. Are his(her) eyes often bloodshot?
 1 Yes 2 No 3 Don't know

F. Does he(she) ever say that **his(her)** eyes burn or itch?
 1 Yes 2 No 3 Don't know

(29) G. Does bright light bother **his(her)** eyes?
 1 Yes 2 No 3 Don't know

H. Does he(she) ever see double or see things blurred?
 1 Yes 2 No 3 Don't know

(30) I. Have you seen him(her) often rub his(her) eyes or blink when he(she) is reading?
 1 Yes 2 No 3 Don't know

J. Does **he(she)** sometimes close or cover one eye or hold his head on **one** side when **he(she)** reads or watches T.V.?
 1 Yes 2 No 3 Don't know

43. DOES YOUR CHILD HAVE ANY TROUBLE HEARING?
 1 Yes 2 No 3 Don't know

44. DOES **HE(SHE)** EVER HAVE EARACHES?
 (34) 1 Yes 2 No 3 Don't know

45. HAS YOUR CHILD EVER HAD ANY INJURY OR DAMAGE **TÓ HIS(HER) EARS**?
 (35) 1 Yes 2 No 3 Don't know

IF YES, in what way was his(her) ear injured? _____

45. HAS HE(SHE) EVER HAD HIS(HER) EAR DRUMS OPENED OR LANCED?

1 Yes 2 No 3 Don't know

IF YES, how many times?

1 Once only 2 Twice only 3 Three times or more

47. HAS HE(SHE) EVER HAD ANY OTHER KIND OF OPERATION ON THE EARS?

(88) 1 Yes 2 No 3 Don't know

IF YES, what was it for? _____

45. HAS THIS CHILD EVER HAD A RUNNING EAR OR ANY DISCHARGE FROM HIS EARS (Not counting wax in the ears)?

(89) 1 Yes 2 No 3 Don't know

IF YES:

A. How often has he/she had this?

1 Once only 2 Twice only 3 Three or more times 4 Don't know

B. Was this his(her) left ear, right ear, or both ears?

1 Left 2 Right 3 Both 4 Don't know

49. HAS HE(SHE) EVER HAD ANY OTHER KIND OF TROUBLE WITH HIS(HER) EARS?

1 Yes 2 No 3 Don't know

IF YES, what kind of trouble? _____

50. IS THERE ANY PROBLEM WITH THE WAY HE(SHE) TALKS?

(43) 1 Yes 2 No 3 Don't know

IF YES, what is the problem?

1 Stammering or stuttering? 2 Lipping? 3 Hard to understand?

4 Something else? What is that? _____

51. DOES THIS CHILD HAVE A LIMP OR ANY TROUBLE WHEN HE(SHE) WALKS?

1 Yes 2 No 3 Don't know

IF YES, how much trouble and what kind is it? _____

52. DOES HE(SHE) HAVE ANY PARALYSIS OR ANY WEAKNESS OR TROUBLE IN USING EITHER ARM OR LEG?

(46) 1 Yes 2 No 3 Don't know

IF YES, what kind of trouble? _____

53. HAS THE CHILD'S HEALTH EVER KEPT HIM(HER) FROM HARD EXERCISE OR PLAY?

1 Yes 2 No 3 Don't know

IF YES:

A. Did a doctor say he should be kept from doing this?

1 Yes 2 No 3 Don't know

B. What was the condition that restricted the child? _____

C. Is he/she restricted this way at present?

(49) 1 Yes 2 No 3 Don't know

54. HOW LONG HAS IT BEEN SINCE HE(SHE) HAS BEEN TO A DOCTOR?

1 During past 12 months 2 1 to 2 years
3 More than 2 years 4 Never 5 Don't know

55. HOW LONG HAS IT BEEN SINCE HE(SHE) HAS BEEN TO A DENTIST?

(51) 1 During past 12 months 2 1 to 2 years
3 More than 2 years 4 Never 5 Don't know

56. HAS THIS CHILD EVER HAD HIS(HER) TEETH STRAIGHTENED OR HAD BANDS ON HIS(HER) TEETH?

(52) 1 Yes 2 No 3 Don't know

IF NO, do you think the child's teeth need straightening?

(53) 1 Yes 2 No 3 Don't know

Here are some questions about your child's sleeping habits.

57. ABOUT WHAT TIME DOES HE(SHE) USUALLY GO TO BED ON NIGHTS WHEN NEXT DAY IS A SCHOOL DAY?

(54-55) _____ P.M. 01 No usual time 02 Don't know

58. DO YOU FEEL THAT WATCHING OR HEARING CERTAIN KINDS OF TV OR RADIO PROGRAMS OR SEEING CERTAIN KINDS OF MOVIES MAKES ANY DIFFERENCE IN HOW WELL YOUR CHILD GETS TO SLEEP OR SLEEPS?

1 Yes 2 No 3 Don't know

IF YES, what kinds of programs or movies? _____

59. DOES HE(SHE) HAVE BAD (UNPLEASANT) DREAMS OR NIGHTMARES?

1 Yes, frequently 2 Yes, but not often 3 Never 4 Don't know

60. DOES HE(SHE) WALK IN HIS(HER) SLEEP?

1 Yes, frequently 2 Yes, but not often 3 Never 4 Don't know

61. HAS **HE(SHE)** SLEPT OVERTNIGHT AT A FRIEND'S HOUSE WITHOUT YOU OR OTHER MEMBERS OF YOUR FAMILY BEING THERE?

1 **Yes** 2 **No** 3 Don't know

IF YES, about how often?

1 Frequently 2 A few times

62. AT HOME, NOW, WHICH OF THESE DESCRIBE YOUR CHILD'S USUAL SLEEPING ARRANGEMENTS?

- (61) 1 Sleeps alone in separate room
Sleeps in separate bed in room shared with another person
2 With brother 3 With sister 4 With parent 5 With other person
Shares bed with another person
6 With brother 7 With sister 8 With parent 9 With other person
-

63. DOES YOUR CHILD SAY **HE(SHE)** IS AFRAID TO BE LEFT ALONE IN THE DARK?

- (62) 1 **Yes** 2 **No** 3 Don't know
-

64. WHAT IS **THE** NAME AND ADDRESS OF THE DOCTOR THIS CHILD USUALLY GOES TO?

Name _____ None

Address _____

65. WHAT IS THE NAME AND ADDRESS OF THE DENTIST **HE(SHE)** USUALLY GOES TO?

Name _____ None

Address _____

FOR GIRLS ONLY:

66. HAVE HER MONTHLY PERIODS STARTED?

- (63) 1 **Yes** 2 **No** 3 Don't know

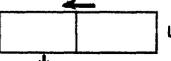
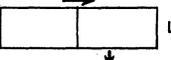
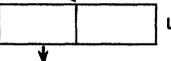
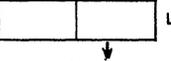
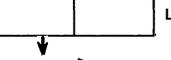
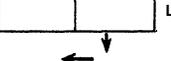
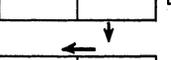
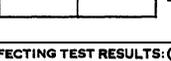
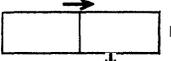
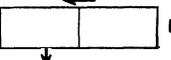
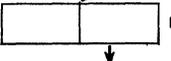
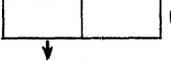
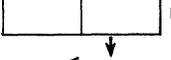
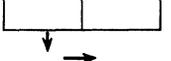
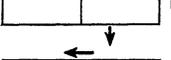
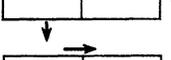
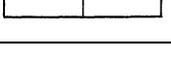
IF YES, how old was she when they started? Years M o n t h s

APPENDIX IC

HEALTH EXAMINATION SURVEY-II

AUDIOMETRY

CARD 05

| AUDIOMETER NO. (6-9) | EXAMINER (10-11) | AUDIO. |
|---|--|--|
| USE THIS SECTION WHEN SAMPLE NO. IS EVEN | CARD COL. NOS. | USE THIS SECTION WHEN SAMPLE NO. IS ODD |
| <p>CPS</p> <p>4000: R  L</p> <p>1000: R  L</p> <p>6000: R  L</p> <p>500: R  L</p> <p>2000: R  L</p> <p>250: R  L</p> <p>4000: R  L</p> <p>8000: R  L</p> <p>3000: R  L</p> | <p>(12-15)</p> <p>(16-19)</p> <p>(20-23)</p> <p>(24-27)</p> <p>(28-31)</p> <p>(32-35)</p> <p>(36-39)</p> <p>(40-43)</p> <p>(44-47)</p> | <p>CPS</p> <p>4000: R  L</p> <p>1000: R  L</p> <p>6000: R  L</p> <p>500: R  L</p> <p>2000: R  L</p> <p>250: R  L</p> <p>4000: R  L</p> <p>8000: R  L</p> <p>3000: R  L</p> |

CONDITIONS AFFECTING TEST RESULTS: (Check)

(48) 1 None

2 Conditions affecting test results

| | |
|---|--|
| <input type="checkbox"/> Cold at present | <input type="checkbox"/> Cold within past week |
| <input type="checkbox"/> Ear discharge | <input type="checkbox"/> Earache within past week |
| <input type="checkbox"/> Equipment defective* | <input type="checkbox"/> Behavior+ <input type="checkbox"/> Other* |

* Specify.....

PHS-4611-2
2-64

SAMPLE NO. (1-5)

APPENDIX ID

HEALTH EXAMINATION SURVEY—1 BODY MEASUREMENTS

☆ GPO: 1964—741079

| OBSERVER (6-7) | | RECORDER | |
|---------------------|-----------------------------------|---------------------|-------------------------------------|
| CARD 65 COL. NO. | SITTING * | CARD 67 COL. NO. | STANDING (FLOOR) • |
| 8-10 | FOOT LENGTH•..... | 8-10 | BIACROMIAL DIAM.•..... |
| 11-13 | FOOT BREADTH•..... | 11-13 | ACROMION TO OLECRANON•..... |
| 14-17 | KNEE HEIGHT•..... | 14-16 | CHEST BREADTH 4TH ICS•..... |
| 18-21 | POPLITEAL HEIGHT•..... | 17-0 | CHEST DEPTH 4TH ICS•..... |
| 22-25 | THIGH CLEARANCE•..... | 20-22 | BICRISTAL DIAM.•..... |
| 26-28 | SEAT • R-K•..... | 23-25 | CHEST GIRTH•..... |
| 29-31 | ELBOW—ELBOW BREADTH•..... | 26-28 | WAIST GIRTH•..... |
| 32-35 | SITTING HEIGHT—ERECT•..... | 29-31 | HIP GIRTH•..... |
| 36-38 | BUTTOCK—POPLIT LENGTH•..... | 32-34 | R. UPPER ARM GIRTH•..... |
| 39-41 | BUTTOCK—KNEE LENGTH•..... | 35-37 | R. LOWER ARM GIRTH•..... |
| 42-44 | ELBOW—WRIST LENGTH•..... | | SKIN FOLDS |
| 45-47 | HAND LENGTH•..... | 38-40 | R. UPPER ARM (MM)•..... |
| 48-50 | HAND • R5ADTH•..... | 41-43 | R. INFRASCAPULAR (MM)•..... |
| | STANDING (ON STEP) • | 44-46 | R. LAT. CHEST WALL (MM)•..... |
| 51-53 | A. • ICNDYLAR DIAM•..... | | |
| 54-56 | R. CALF GIRTH•..... | 47-66 | WEIGHT (LBS)•..... |
| 57-60 | STANDING HEIGHT•..... | 79-80 | END CARD 67 |
| | ANTHRO. NO. | | |
| 61-62 | COLS. 14-25•..... | | |
| 63-64 | COLS. 32-35•..... | | |
| 79-80 | END CARD 66 | | |

BODY MEAS.

* In cm

MEASUREMENTS NOT DONE OR SIDE VARIED-specify which and give reason

PHS-461 I-3
REV. 7.64

SAMPLE NO. (I-6)

APPENDIX IE

CONFIDENTIAL - The National Health Survey is authorized by Public Law 652 of the 84th Congress (70 Stat. 489; 42 U.S.C. 242C). All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to others for any other purposes (22 FR 1687).

FORM APPROVED
BUDGET BUREAU NO. 68-R620-S4.6

H ES-243

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
National Center for Health Statistics
Health Examination Survey

SUPPLEMENTAL INFORMATION FROM SCHOOL

The child whose name appears below is one of the sample of children being studied in the Health Examination Survey. Please complete this form on the basis of school records and/or information the child's teacher or other school official may have. Please return it in the enclosed franked envelope. This child's parent or guardian has given us written authorization to obtain information from the school.

| | | | |
|---|-------------|---------------------|---------------|
| School Number | | Sample Child Number | |
| Name of child: _____ | | | |
| | (Last Name) | (First Name) | (Middle Name) |
| Home address (for identification) _____ | | | |

1. Birth date: _____
(Month) (**Day**) (Year)
2. Present grade placement of this child _____
NOTE: If this grade placement is qualified in any way, please so indicate. (e.g., "Fourth generally, but placed with third grade for _____ (specify)")
3. Have any grades been skipped or double promotions given? Yes No
4. Have any grades been repeated for any reason? Yes No
5. If "Yes" above, give reason: academic failure social immaturity
 excessive absenteeism
 other (specify) _____
6. Has this child been absent from school an unusual number of times or for an unusually long period in the most recent 6 months for which you have attendance records: Yes No Don't know Not applicable
7. If "Yes" above, what is the main reason for the absence?
 Illness of child Illness in family
 Other (specify) _____
 Unknown Not applicable
8. If the following special resources were available, check those you would recommend for this child:
a. Special provision for hard of hearing.
b. Special provision for "sight saving".
c. Speech therapy.
d. Special provision for orthopedically handicapped.
e. Special provision for gifted children.
f. Special provision for "slow learners".
g. Class for mentally retarded.
h. Special provision for emotionally disturbed.
i. Other (specify) _____
j. None of above.
9. If you have checked any of the above items "a" thru "j", are the particular resources checked available for this child?
 Yes (If several checked, specify which available: _____)
 No Not applicable
10. If "Yes" above, are those resources being used by the child? Yes No
If "Yes" in item 9, but "No" in 10, what is the reason? _____
11. Which one of these statements most accurately describes this child?
 A. His adjustment is at times a concern. You think of him as a problem or future problem.
 B. Unusual in his ability to cope with normal situations. At least occasionally have thought of him as "unusually well adjusted."
 C. YOU rarely think of him in terms of his behavior. He is not described by A or B.

12. As you know, the ability to pay attention to a task and to sustain attention (concentrate) changes with age, although children of the same age differ. Check the item which best describes the child in the classroom situation.

- A. Pays attention as well as most children his age.
- B. Characteristically is more attentive than others his age.
- C. Characteristically is less attentive than others his age.
- D. No basis for judging which of above fits this child.

13. In the classroom situation which one of these statements most nearly describes this child?

- A. Almost constantly moving, inappropriately talks out loud, drops things, leaves his seat when he should not, finds reasons to be "on-the-move".
- B. Slightly more restless than most children his age. But usually is not a problem in the classroom.
- C. Shows average amount of restlessness if fatigued, bored, etc. Motor activity level is as expected for his age.
- D. Remains quiet long after the average child has become restless. Sometimes seems too controlled for his age.
- E. No basis for judging which of above fits this child.

14. Below are a list of statements which may or may not describe this child. If the statement is descriptive of him/her, place a check mark (✓) in front of the statement. If it does not describe this child, leave the space blank. (You may check several items).

- A. Other children frequently accuse him of fighting.
- B. "Accidentally" trips, shoves or hits other children. Is too "rough" with other children.
- C. Frequently comes to your attention because he has been injured.
- D. Aggressive behavior frequently makes disciplinary action necessary.
- E. Children frequently complain that he uses bad words.
- F. Parents of other children call to complain about his behavior.
- G. No method of discipline seems to work with him.
- H. No basis for judging about this child in these areas.
- I. None of above statements describe this child.

15. How frequently is any specific disciplinary action required for this child?

- A. Frequently
- B. Occasionally
- C. Never
- D. No **basis** for judging which of above fits this child.

16. When children "choose sides" is this child usually

- A. Among the first few to be chosen.
- B. Neither among the first nor the last ones chosen.
- C. Almost always among the last ones chosen.
- D. Relationship to group so changeable you can't predict order in which he would likely be chosen.
- E. No basis for judging which of above fits this child.

17. When a leader is chosen by the group, is this child

- A. Chosen more frequently than the average child.
- B. Chosen about as often as the majority of the children.
- C. Almost never chosen.
- D. No basis for judging which of above fits this child.

18. With respect to intellectual ability, would you judge this child to be:

- A. About average for his age (neither in the top - about one-fourth, nor the bottom - about one-fourth).
- B. Clearly above average for his/her age (In about the top fourth).
- C. Clearly below average for his/her age (In about the bottom fourth).
- D. No basis for judging this child.

19. With respect to academic performance, would you judge this child to be:

- A. About average for his/her age (neither in the top - about one-fourth, not the bottom - about one-fourth).
- B. Clearly above average for his/her age (In about the top fourth).
- C. Clearly below average for his/her age (In about the bottom fourth).
- D. No basis for judging this child.

20. How long have you (the person providing the above information) known this child?

- Less than one month.
- More than one but less than six months.
- More than six months but less than one year.
- More than one year.

21. In what capacity have you known this child?

- Teacher in classroom.
- Teacher in special area (specify) _____
- School principal or assistant
- Other (specify) _____

22. Name of respondent providing information on this child

(School)

23. Date completed-----

APPENDIX IF

CONFIDENTIAL • The National Health Survey is authorized by Public Law 652 of the 84th Congress (70 Stat. 489; 42 U. S. C. 242c). All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to others for any other purposes (22 FR 1687).

HES - 257

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Survey
National Health Survey

(1-5) _____

Child's Medical History • Interviewer

| NAME OF CHILD (Last, First, Middle) (6-11) | SEGMENT | SERIAL | COL. NO. |
|--|---------|--------|----------|
|--|---------|--------|----------|

1. Were there any questions on the Health History Questionnaire that you could not answer, or questions where you were **not sure what was** wanted?

Yes No

(If Yes)

- a. Which questions? _____
b. What was the trouble? _____

Be sure to check over the self-administered questionnaire for completeness and for inadequately answered "open" questions.

One of the things we want to find out is something about what children of this age eat since that is related to health.

2. Will you please try to remember as well as you can just what _____ ate yesterday and let me note it down?

3. How was this different from most days, or was it about the same?

4. How many definite meals were there yesterday where the child sat down with others for a period of eating, and **which meals were they?**

5. Which one of the statements in each of these sets best describes

a. (1) Eats too much (2) **Usually** eats enough (3) **Doesn't** eat enough

- b. (1) Eats nearly all kinds of food
(2) Eats most kinds of foods, dislikes a few kinds
(3) Somewhat fussy about kinds of food he (she) eats
(4) Very fussy about food; won't eat many things

- c. (1) On most days, eats two or more meals with others in the family
(2) On most days, eats one meal with others in the family
(3) On most days, doesn't eat any of his (her) meals with other members of the family

6. Marriage history (Parents'): (Enter present status from items 12 and **12a** on HES-2. Complete only as indicated in instructions.)

| | Wife | Husband (if data different) |
|----------------------|-------|-----------------------------|
| Present status: | _____ | _____ |
| Year first married?: | _____ | _____ |
| Year ended?: | _____ | _____ |
| How ended?: | _____ | _____ |
| Married again, etc: | _____ | _____ |

7. Age agreement between HES-2 and Child's Medical History • Parent.

Yes No

a. If no, which is correct? _____

8. Twin status as indicated by **HES-2**.

Is this child a twin? Yes

No

a. If yes, is the child an identical twin?

Yes

No

9. Does _____ have certain tasks as jobs he (she) is supposed to do regularly just as part of the family?

Yes

No

a. If yes, list them (up to 3 tasks).

10. Does he (she) have a pet?

Yes

No

a. If yes, does he (she) take care of it?

Usually

Sometimes but not often

Not usually but often

Not at all

I would like to ask a few questions about _____'s friends and playmates.

11. Does he (she) have

a. Only a few

b. A good number

c. Very many other children who are good friends?

12. Are his (her) friends mostly

a. Older

b. About the same age as he is?

c. Younger

13. How many of his (her) close friends do you know by sight and by first and last name?

a. All

b. Most all

c. Quite a number

d. Only a few

14. When it comes to meeting new children and making new friends is _____

a. Somewhat shy

b. About average willingness

c. Very outgoing - makes friends easily

15. How well would you say he gets along with other children?

a. No difficulty; is well liked

b. As well as most children

c. Has difficulty with many children

16. Has _____ ever "run away from home"-- that is, disappeared at a time when you thought this is what he (she) might be doing and stayed away so long that you had to have people start searching or looking for him (her)?

Yes

No

a. If yes, how often has this happened? _____

b. If yes, what was the reason? _____

17. Has anything ever happened that seemed to seriously upset or disturb your child?

Yes

No

a. If yes-- Tell me about it. _____

b. How old was he (she) at the time? _____

18. With respect to how relaxed or how tense or nervous your child is, would you rate him (her)

a. Rather high strung, tense and nervous.

b. Moderately tense.

c. Moderately relaxed.

d. Unusually calm and relaxed.

19. With-respect to your child's temper or his (her) getting angry, would you rate him (her)

a. Has a very strong temper, loses it easily.

b. Occasionally shows a fairly strong temper.

c. Gets angry once in a while but does not have a particularly strong temper.

d. Hardly ever gets angry or shows any temper.

20. Aside from regular classes in school, does _____ take any special lessons or classes (e.g., music, dance, athletics)?

Yes

No

Don't know

IF YES: What are they? _____

21. Does _____ belong to any clubs or group activities such as Cub Scouts, Brownies, etc.?

Yes

No

Don't know

IF YES: What ones? _____

22. About how much time does your child spend on the usual day away from home when you do not know definitely where he (she) is?

a. None at all

b. Some but less than 2 hours

- c. Between 2 and 4 hours
- d. More than 4 hours
23. About how much time would you guess your child spends on the usual day doing each of the following:
(Enter number of hours or fraction of hours or zero as appropriate)
- a. Watching television? _____
- b. Listening to radio? _____
- c. Reading newspapers, comics, magazines? _____
- d. Reading books (except comic books)? _____
- e. Playing with friends? _____
- f. Playing by himself? _____
- g. Working (doing chores, etc.)? _____
24. Have you ever had, over a considerable period of time, a good bit of trouble in getting your child to
- a. Go to bed when you thought it was bedtime Yes No
- b. Get to sleep after he (she) had gone to bed Yes No
- c. Take a nap when he (she) was little Yes No
25. What would you say were _____'s best (strongest) points and worst (weakest) points?
- a. Best _____
- b. Worst _____

INSTRUCTIONS FOR COMPLETING THE INTERVIEWERS' QUESTIONNAIRE

CHECKING THE CHILD'S MEDICAL HISTORY - Parent

Ask Question 1 on the Interviewer Questionnaire to ascertain whether or not the respondent had any difficulty with any questions. If the respondent reports any difficulties record the number of the question or questions and the nature of the problem. Explain the questions and obtain and record the proper answers.

Next check over the entire questionnaire to see that all relevant items are answered. If you find blanks ask the question and record the response. Please record all of your comments and responses in red pencil.

At the same time, review and ask required probes for the open questions. Throughout the self-administered questionnaire you will find several open questions, such as 5b and d, 8a and b, 9a, etc. The respondents may give **inadequate answers** to these open questions and the interviewer will need to review each one carefully. When to probe for more information must be left to the interviewer's judgment. Remember that the main purpose of these questions is to provide information to the doctor who will examine the child. The doctor cannot question the mother because she will not be present during the examination. He cannot question the child because the child will not have the necessary information in most cases. Therefore, the interviewer must be sure that the responses are sufficiently clear and complete to provide the doctor with all the information he needs. The interviewer will, of course, not understand the medical significance of much of the information. She can, however, decide when there is enough information to give her a clear picture of the situation. Record responses directly on the self-administered questionnaire.

Examples: Question 21a, mother reports "heart condition". We would like to have more details about the condition.

Question 26, either a "Don't Know" or a "**Yes**" answer calls for some checking. Here, as elsewhere, if "Don't Know" merely indicates lack of information, there is nothing to add. Whenever there is a history which the mother thinks may apply, that should be described.

Question 30a, the response is "stomach operation". Again, a more detailed report is needed.

To probe for more information use general "non-directive" probes. Non-directive probes are questions which ask for more information but do not suggest any particular response patterns. Examples of such probes are: "Tell me more about that", "Can you give me some more information about that", etc.

One such probe is "I notice you said. . . ." "Can you tell me something more about that?" It should be used to **followup** all open questions which are not entirely clear. Write the responses in the spaces following the question, or on the back of the page. Verbatim reporting is important.

Review Question 32, and for questions a through k ask the additional questions below, recording the item number and answers on the reverse side of that page of the "Child's Medical History - Parent".

Probes for use with "Yes" answers to Question 32:

- a. Was he (she) sick in bed at home?
How long?
- b. Was he (she) sick in bed at a hospital? How long? Where?
- c. Did he (she) completely recover so that he (she) was no different from the way he (she) was before the illness? If not, describe how he (she) was different afterwards.

ASKING ADDITIONAL INTER VIEWER'S QUESTIONS

Next, ask the series of questions about eating habits of the child. Be sure to record the diet consumed on "yesterday" -- the day immediately preceding your visit -- even if the parent says that was not the usual diet. It is important that we ask about a specific day decided in advance. Record the items in whatever way the parent can describe them. Thus it might be for a particular child the mother could say, "he had one egg and toast and a glass of milk in the morning; then he ate whatever the lunch was at school; then he had a peanut butter sandwich and a cake when he came home. . . .etc." It is not necessary for you to record the incidental wording of the mother's statement for this: simply list all the items named • both what they were and how much was eaten.

Refer to Question 12 on the Census Questionnaire (NHS-HES-2) and note the answer as to "present marital status" and, if relevant, "married more than once". Then ask the following questions, first with respect to the respondent and then separately with respect to the spouse if a spouse is currently a member of the household.

a. In what year were you first married?

If Question 12 was checked "Married" and 12a was answered "No", then omit the rest of the question. Otherwise, continue:

b. What year did that marriage end?

c. How did that marriage end • death of your husband (wife), divorce, or separation?

If Question 12 was checked "Married" and 12a was "Yes", then ask:

d. In what year were you next married again?

e. Was that your present marriage?

If e above is answered "Yes" then omit following questions: If e is answered "No" go back to b above and record answers to questions b, c, d and e for each successive marriage until e is answered "Yes".

If Question 12 was checked "Widowed", "Divorced", or "Separated", ask questions b and c above. Then ask:

f. Were you married again?

If answer to f is "No" then omit the following questions. If f is answered "Yes" then ask:

g. In what year were you next married again?

Then repeat b, c, f and g until f is answered "No".

Compare the age recorded on the Census Questionnaire with the age on Page 1 of the Child's Medical History - Parent. Be sure any disagreement is correctly resolved. Also examine the ages shown for other siblings on HES-2 to determine whether this child may be a twin. If so, get the parent's statement as to whether the twins are "identical twins" as distinct from "fraternal twins"

The remainder of the questions are of interest to the physicians and the psychologists in connection with evaluating the stage of mental and social development the child has reached and in obtaining information relevant to mental health.



APPENDIX II

AUDIOMETRY TESTING PROCEDURES

General. -At the beginning of each day, turn on the audiometer at least 10 minutes before performing the daily field check on the audiometer.

Leave the audiometer turned on until the completion of testing in a day. Do second field check upon completion of testing.

Make sure that both doors of the audiometry room are closed when testing. Another member of the staff may have to close the outer door after you are in the room.

Recording.-Use left hand section of form when sample number is even; and use right hand section of the form when sample number is odd.

When the sample children shows signs of fatigue, do not test the last 2 frequencies (8,000 and 3,000); place X in these boxes and check "behavior," specify 'fatigue.'

For any other part of the test that cannot be completed enter X in the appropriate box and indicate the reason under 'Conditions Affecting Test Results.'

Instructions to the examinee. -After entering the beginning time and Technician No., on the control record the technician' will proceed with the following steps:

1. Detailed instructions should be given children to stress the following points:
 - a. Earphones will be placed by the technician and must not be touched by the child.
 - b. Sounds will be heard in one ear at a time.
 - c. Sounds will get progressively fainter.
 - d. Child should show when the sound is heard by raising his right or left hand depending on the ear in which the sound is heard.
 - e. Child should keep his hand up until the sound is no longer heard,
 - f. Child should raise his hand to the sound even though it sounds very faint.
 - g. During the test eyeglasses, earrings, and chewing gum should be removed.
2. Examples of detailed instructions (particularly for younger children): "You are going to listen to some sounds from earphones inside this quiet room. Sometimes the sounds will be like whistles, sometimes like horns. They might be easy to hear, or they might sound tiny or soft. If you

hear the sounds in the right ear (point to the ear), put up your right hand (point to or touch the child's right hand). Now, if you hear the sounds in the left ear (point to left ear), put up your left hand (point to or touch the child's left hand). You will have to listen very carefully to hear the sounds. "

Conduct of the Hearing Test

1. Take the child into the test room and seat him with his back to the window.
2. Close the test room doors.
3. Repeat the instructions briefly.
4. Make sure that the ears are not obstructed with cotton before placing the earphones.
5. Place the earphones on the child making sure that the earphone opening is over the ear canal and that the earphone has a good seal against the child's ear. Red earphone is placed on the right ear, grey on the left. Girls should pull hair back off the ear before earphone is placed.
6. Make sure the audiometer is ready for the test by checking that it is set in the following manner:
 - a. Power on for at least 10 minutes prior to start of test.
 - b. Interrupter switch in the Off position; output switch at the word "right."
 - c. Frequency dial set at 4000 cycles.
 - d. Intensity dial set at 60 decibels.
 - e. 30-db switch on the "in" position.
 - f. Earphone indicator on the 30-db switch box is turned to the ear being tested first as prescribed by the test form; when the examinee number is odd, use the right-hand column and follow the sequence **indicated**—the right ear is first; when the examinee number is even, use the left-hand column and follow the sequence indicated there—the left ear is first,
7. The 4000-cycle tone is introduced to the first ear to be tested at a level of 60 decibels for about 3 seconds. This should be well within the range of audibility for most children and will serve as listening practice.

8. When the child responds, set the intensity dial 10 decibels below the previous stimulus intensity (**50 db**) and present the tone for about 5 seconds.
9. The procedure of dropping the level of the tone in 10 decibel steps with at least one presentation at each level should be continued until no response is obtained.
10. Then raise the intensity dial 5 decibels.
11. If a response is obtained at this level, the intensity is reduced 10 decibels. If there is no response, raise the intensity 5 decibels. Always descend 10 decibels and count the number of responses at the threshold while ascending in intensity in 5 decibel steps.
12. The threshold recorded is the lowest **dial reading** at which **50** percent or more responses are obtained, that is 2 out of 3 or 3 out of **5** trials. Below this level less than **50**-percent response is obtained and above **this** a **100-percent** response is approached.
13. Make the proper two-digit entry on the test form.
14. Repeat the procedure presenting the **4000-cycle** tone to the second ear to be tested and then shift to the next frequency as indicated on the test form, until the test has been completed for all frequencies and for both ears.
15. Remove the earphones and immediately complete the questions pertaining to the reliability of the test.
16. Apply disinfectant lightly to the headband and earphones with a wad of cotton while the child is watching.
17. Escort the child from the test room.
18. Fill in all information asked for on the form.

Procedure Necessary for Threshold Accuracy

1. Avoid rhythmic presentation of signals to the child. The child may respond to the rhythm rather than to the sound. This is especially true of younger children.
2. Avoid a long, drawn-out search for a threshold which tends to lessen the interest and cooperation of the person being tested and to produce fatigue. If necessary, shift to another frequency and test, then return to the problem frequency later. Note at the bottom of the form any change in the order of the test on the **test** form.
3. Avoid giving visual or auditory cues when the tone is presented; for example, looking at the person each time a tone is presented, or making a click with the interrupter switch, or clicking the intensity dial.
4. Double check the dial reading.
5. Check whether the switch was on "**in**" position.
6. Avoid activity which will distract the child.
7. Check the response of the child occasionally by leaving the tone off for several seconds and then presenting the tone to see if the child is responding consistently.
8. Avoid presentation of the test tone for longer than **5** second. This may lead to a false response.
9. Count only the ascending responses in determining the threshold.
10. Avoid being influenced by the threshold obtained for the first cycle tone when obtaining the threshold for the second presentation of this tone.
11. Make sure all forms are complete.

Record the time the test is finished and **Technician** number on the control record. When the test is not done or incomplete, record reason.

APPENDIX III

ESTIMATION PROCEDURE

An examination finding for a sample child is included in tabulations as a weighted frequency, the weight being a product of the reciprocal of the probability of selecting the child, an adjustment for non-response cases, and a poststratified ratio adjustment which increases precision by bringing survey results into closer alignment with known U.S. population figures by color and sex within single years of age 6 through 11.

In the second cycle of the Health Examination Survey the sample of slightly more than 7,400 children was the result of three stages of selection, the probability of selecting an individual sample boy or girl being the product of the probabilities of selection at each stage. Briefly the three stages of probability selection are of:

1. A single PSU from each stratum of PSU's.
2. Twenty segments from each sample PSU.
3. Sample children from among eligible children found in the segments.

Since the strata are roughly equal in population size and a nearly equal number of sample children were examined in each of the sample PSU's, the sample design is essentially self-weighting with respect to the target population, that is, each child 6 to 11 years old has about the same probability of being drawn into the sample.

The adjustment for nonresponse is intended to minimize the impact of nonresponse on final estimates by

imputing to nonrespondents the characteristics of "similar" respondents, relating nonrespondents to respondents by ancillary data known for both. In the second cycle the usual household nonresponse due to refusals to be interviewed and "not at homes" was virtually zero, so the only nonresponse category requiring some adjustment was the "failure to be examined" nonresponses, which amounted to 4.0 percent of the 7,417 sample children. "Similar" respondents were judged to be children in a sample PSU having the same age (in years) and sex as the children not examined in the sample PSU. The weights of all respondents in a PSU having the same age and sex were adjusted upward to give representation to the nonrespondents in the PSU having that age and sex.

The poststratified ratio adjustment used in the second cycle achieved most of the gains in precision which would have been attained if the sample had been drawn from a population stratified by age, color, and sex and makes the final sample estimates of population agree exactly with independent controls prepared by the Bureau of the Census for the U.S. noninstitutional population as of August 1, 1964 (approximate mid-survey point) by color and sex for each single year of age 6 through 11. The weights of every responding sample child in each of the 24 age, color, and sex classes is adjusted upwards or downwards so that the weighted total within the class equals the independent population control.



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