ample, in an area newly settled by young families the transition from a child population of preschool children to one of school age children requires only 4 or 5 years.

*Daily Work Loads*

The daily work load estimates given in Table 10 (page 31) can be used only in surveys for which the time required for an interview is approximately 5–10 minutes, as in the immunization surveys. As shown in Table 35 (page 152), the average time spent in an urban Interview Sector with a cluster size of 6 housing units was 33.8 minutes with a coefficient of variation of 25 percent. The average travel time between Interview Sectors was 11.4 minutes with a coefficient of variation of 70 percent. The values for travel time are somewhat high since they include data from several survey training courses in which the field work was carried out in one day by a large number of interviewers who were not familiar with the city in which the survey was held. Under ordinary circumstances with a small group of interviewers working for several days, the average rate of accomplishment increases after the first day of field work.

It is always advisable to carry out a field pre-test of a new interview questionnaire. If this is done so that field work simulates the working procedures which will be used in the survey, estimates can be made of the average time required to complete an Interview Sector.

The estimate includes two components (1) the time actually spend in interviewing and (2) the time required for locating housing units and other work within a primary sampling unit. A guide for estimation of the time needed for these activities is given in Chapter 11, pages 153–154. It will be noted that these were obtained indirectly, the only data recorded consisting of the time of arrival and departure for each primary sampling unit. More detailed recording would place an undue burden on the interviewers but might be done in a pilot study by the survey staff. If this is not done, equation (11.32), page 154 may be used to estimate the total time required within
a primary sampling unit if the average time for completion of an interview is determined.

Selection of the Sample and Organization of the Field Work

The procedures described in Chapters 4 and 5 for selection of a sample and field examination of primary sampling units in urban or rural areas are of general application. The size of the sample cluster may need adjustment in accordance with characteristics of the variable of interest. For an item that is likely to be quite similar among families living on a block, but varying from one locality to another within an area, a smaller cluster size, perhaps 2–4 housing units should be used. Appendix Tables B and C may be used for this purpose since if every other number in the sequences is struck out, random selections of 3 or 4 housing units, respectively, out of 16, will be obtained.

If the item under study is a rare attribute the sample cluster should be increased in size. For this purpose, Appendix Table C, may be used for selection of sample clusters of 8 housing units in a survey of all families, or each of the 16 housing units in an Interview Sector can be visited. The Interview Sector itself may be made larger but if this is done the number of primary sampling units formed of more than one block will increase, thus adding to the work of selecting primary sampling units, (see Chapter 4, Step 5, pages 47–48).

The procedures for organization of the field work described in Chapter 6, although couched in the phraseology of an immunization survey, are generally applicable. Two variations of the Interview Schedule Form, Figures 8A, 8B (pages 81–82) for use in either surveys of all families or a Preschool Immunization Index survey are illustrated. These can be modified in obvious ways to record pertinent information on the field work of surveys with other objectives.

Forms and Instructions

The description of the procedures and forms used by interviewers (Chapter 7) is rather dull reading except for those interested in immunization surveys. They are
presented in detail to give emphasis to the importance of explicit written instructions on procedures for selection of housing units and interviewing respondents. Verbal instructions are frequently misunderstood and easily forgotten. Even with full explanation of written instructions, some interviewers will need correction after field experience. Carefully prepared instructions to meet the needs of a particular survey are essential.

Tabulation of Data and Report of Findings

The forms for hand tabulation and summarization of findings described in Chapter 8 are especially designed for immunization surveys. Tables 24–26, (pages 113–114), however, are basic in describing the findings of any survey, and the development of analytical tables similar to Table 26 should be one of the earliest steps in planning the collection of any data.

Hand tabulation of data to obtain early summaries of findings is usually necessary in epidemiological surveys. If this can be done by means of forms such as are illustrated in Figure 12 (page 106), the annoyance of re-checks to discover errors associated with hand tallies will be avoided. The summaries obtained through these tabulation forms comprise only a fraction of the complete analysis but enable checking of the most essential information as the field work progresses.

Variances and Averages

The procedure for calculation of variances presented in Chapter 9 may be used to calculate variances in surveys of other attributes, but with awareness that it is recommended as a convenient approximation. The conclusions drawn from studies using this method of variance calculation have been in accord with the epidemiological patterns observed in the data. Such empirical judgments indicate that the procedure affords satisfactory approximations. If evaluation of small differences is critical and early analysis of results is not essential, the use of variance formulas specifically designed for a particular survey should be considered. The references in the following section may serve as a guide to the literature of
survey procedures in which methods of estimation and calculation of averages and their variances are treated in detail.

Notes on Related Survey Literature

A few papers and general works on sample survey methods are included in the list of references. The following notes indicate the nature of the subjects covered.

For those who are not strong on mathematics but would like to understand the rationale behind the most commonly used sampling methods, the short book by Stuart (1962) is recommended. The exposition is largely by means of worked examples on small populations. A concise non-mathematical introduction to the use of sampling in the field of public health is given in the report by the Committee on Sampling Techniques of the Statistics Section, American Public Health Association (1954). Practical guidance to surveys of health, housing and other demographic characteristics will be found in a handbook (United Nations, 1964), for household surveys, which also includes a chapter with selections on questionnaire design, interviewer training, non-sampling errors and related topics.

The next four publications describe plans for particular kinds of surveys. Following these are references to standard works on sampling which are written primarily for survey statisticians but include chapters of a descriptive nature which can be read with profit by the general reader.

Kish (1952) describes an area-probability method of urban sampling with helpful discussion of problems which arise in planning and selection of the sample.

Monroe and Finkler (1959) present a survey method for a county stratified into urban and rural places, and open country. Buncombe County, North Carolina, is used as an example. Formulas are given for estimation of means, totals and their variances in simple random and stratified random sampling.

A plan for a continuing health survey of a city health jurisdiction is given in a paper by Tayback and Frazier (1962). The sampling plan is outlined; field procedures, costs and selected findings are discussed.
Woolsey (1956) describes a survey of Hagerstown, Md., in which a city directory was the principal basis for selection of the sample. Calculation of various proportions and a method for estimating their variances is presented.

Cochran's Sampling Techniques (1963) presents a wide range of sampling designs with formulas for estimates and their variances. Although many conclusions are expressed in algebraic form, the work includes descriptive sections of value to the general reader.

Volume I of the two-volume work of Hansen, Hurwitz and Madow (1953) provides a detailed introduction to the sampling of human populations with estimation and variance formulas for many sample designs. Volume II is essentially mathematical, giving derivations of formulas and proofs of theorems presented in Volume I.

Sukhatme's volume (1954) gives a thorough exposition of theory with examples from the field of agriculture.

Yate's book (1960) includes several chapters on practical aspects of sampling and gives formulas for a number of sample designs. Many of the examples are of agricultural survey problems.
