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BOOK REVIEWS

H. S. KONIJN, *Statistical Theory of Sample Survey Design and Analysis*. North Holland, Amsterdam, 1973, xv+429 pages, fl 93.60.

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1. Introduction. In the development of a theory of sampling from finite populations it is commonly assumed that there is a finite population of N distinguishable units labelled as $\mathbf{N} = (1, 2, \cdots, N)$. The variate value of interest for unit i is denoted by Y_i. A sample of size n selected from the population, and denoted by s, is an ordered sequence $i_1, \cdots, i_n$ ($i_j \in \mathbf{N}$; $j = 1, \cdots, n$, repetitions allowed) together with the associated sequence of observed variate values. A sample design is some countable set S of ordered sequences, s, together with a probability measure assigned by choosing a function $p(s) \geqq 0$ where $p(s)$ is the probability of selecting the sample s ($\sum_{s \in S} p(s) = 1$). It is commonly postulated that the principal objective is to use the sample data to make inferences about functions of $\mathbf{Y} = (Y_1, \cdots, Y_N)$; e.g., the finite population total, $\sum_{i=1}^{N} Y_i$.

Reference books treating this subject have appeared in clusters (in the early 1950's, early 1960's, late 1960's). Since the mid-1960's there have been a large number of significant new developments in the theory of sampling from finite populations. Thus, one looks forward to a new book treating this area. Ideally, such a book would unify at least some of the most important new ideas heretofore scattered throughout the literature; and would present the plethora of new results in a coherent, unified, notation. The tasks of unification and coherent presentation are particularly important in sample survey theory because some of the new developments represent significant departures from the foundations upon which most of the extant theory has been constructed.

The hallmarks of sample survey theory have been: (1) point estimation of parameters intended to "describe" the finite population (e.g., the finite population total); and (2) inferences based on the randomization distribution induced by the sample design. Recently, the extensive use of survey data for analytical purposes (i.e., to elucidate relationships among variables) has been recognized; and research has been initiated on the design and analysis of data from such surveys. Also, extensive research on the "foundations" of sampling from finite populations has been carried out. This has taken two forms: (1) delineation, support and extension of the randomization mode of inference; (2) development of alternative inferential methods. The latter commonly involve use of predictive inference for the nonsampled components of $\mathbf{Y}$ via superpopulation models linking

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