SAMPLING DESIGNS TO CONTROL SELECTION PROBABILITIES OF CONTIGUOUS UNITS

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ABSTRACT

Recent studies in environmental and ecological research have generated interesting statistical problems, which call for innovative solutions. Finite population sampling is one of the areas that has seen some new research activity as a result of this. In some situations a region of interest is divided into many smaller units or plots, and a characteristic of interest is observed at a small number of randomly selected units in the region. Since inferences for the entire region are based on observations at the selected units, it is important that these units are representative for the entire region. This is especially a challenge if units that give particularly small or large observations are sparse and appear only in a few clusters of neighboring or contiguous units in the region. This phenomenon, however, is not at all uncommon in environmental and ecological research. It requires new ideas for sampling designs and inference methods. In this paper we present some sampling designs that have a tendency to avoid the selection of many neighboring units.