4.3 NON-PROBABILITY SAMPLE

A non-probability sample or a non-random sample is also called a judgement sample. The important types of a non-random sample are the purposive sample and the quota sample. They are briefly described in the subsections that follow.

14.3.1. Purposive Sample. A purposive sample is a non-random sample in which the selection of the sampling units is based on a person's *expertise* about the population. A purposive sample is liable to bias to be introduced by the deliberate subjective choice of the person who selects the sample. As the purposive sampling is not based on probability theory, there is therefore no objective method for measuring the reliability of the sample results, and hence the information gathered from such a sample cannot be made a basis for statistical inference.

The purposive sampling in spite of these obvious drawbacks is in several situations preferred over probability sampling and gives quite satisfactory results. For instance, when taking a sample of melons from a

truck-load, the sampler inspects the whole load and then selects according to his expert subjective judgement, those melons which he considers to be representative. Purposive sampling can also be appropriate when a population contains relatively few large units whose characteristics are known. Its main use, however, is in Economic and Business statistics.

14.3.2. Quota Sample. A quota sample is a type of judgement sample. It is a sample, usually of human being, in which the information is collected purposively from the segments of a population (the quotas), e.g. the quotas of men and women; urban and rural; upper, middle and lower income groups; etc. These factors are termed quota controls. They are intended to make the sample as representative as possible and to reduce sampling bias that creeps in because the selection of respondents within the quotas depends on the personal choice of the interviewers. Interviewers being human, are likely to look for persons who either share similar opinions or are personally known to them or are conveniently located.

Quota sampling may be considered as stratified sampling in which the selection of units within strata is non-random. The advantages of quota sampling are that it is cheaper, it is easy administratively and it is a very quick form of investigation. Quota sampling is widely used in public opinion polls and market research surveys.

14.4 SAMPLING DISTRIBUTIONS

A sampling distribution is defined as a probability distribution of the values of a statistic such as a mean, a standard deviation, a proportion, etc, computed from all possible samples of the same size, which might be selected with or without replacement from a population. As a sampling distribution of a statistic is a probability distribution, therefore the sum of all probabilities in it is always equal to one; and the distribution has its own mean and its own standard deviation. The values of the statistic computed from one or more samples actually selected from the population and the sampling distribution of the statistic provide all the information one needs in making decisions about the values of the population parameters. There are many types of sampling distributions but the most frequently used types in statistical inference are the binomial, the normal, the t-distribution, the chi-square distribution, and the F distribution. A sampling distribution should not be confused with a sample distribution which is the distribution of individual values of a single sample.

Standard Error. The standard deviation of a sampling distribution of a sample statistic is called the standard error (abbreviated to S. E.) of the statistic. The standard error thus measures the dispersion of the values of a statistic, that might be computed from all possible samples, whereas the standard deviation of a population (or sample) measures the dispersion of the values of the population (sample) units about the population (sample) mean.