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TYPES OF SAMPLING TECHNIQUES IN PHYSICAL EDUCATION AND SPORTS

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ABSTRACT

In sports statistics, sampling techniques has a immense importance of its own. There are various sampling techniques available for drawing a sample from the population. In deciding the sampling technique used for drawing a sample an investigator is concerned about two fundamental issues. These are representativeness of sample and minimization of biases of study. Further selection of sampling technique is done on the basis of characteristics of the population. In sports statistics, sampling is the selection of a subset (a statistical sample) of individuals from within a statistical population to estimate characteristics of the whole population. Two advantages of sampling are that the cost is lower and data collection is faster than measuring the entire population. Each observation measures one or more properties(such as weight, location, color) of observable bodies distinguished an independent objects or individuals. In survey sampling, weights can be applied to the data to adjust sample design, particularly stratified sampling. Results from probability theory and statistical theory are employed to guide the practice. In business, medical research and in the field of physical education and sports, sampling techniques are widely used for gathering information about a population

I INTRODUCTION

Successful statistical practice is based on focused problem definition. In sampling, this includes defining the population from which our sample id drawn. A population can be defined as including all people or items with the characteristics one wishes to understand. Because there is very rarely enough time or money to gather information from everyone or everything in a population, the goal becomes finding a representative sample (or subset) of that population. The types of sampling technique works in an efficient or consistent manner to select the sample for statistical purposes. The way in which we select sample of individuals to be research participants is critical. How we select participants (random sampling) will determine the population to which we may generalize our research findings. The procedure that we use for assigning participants to different treatment conditions (random assignment) will determine whether bias exists in our treatment group (are the groups equal on all known and unknown factors?) We address sampling techniques in this paper. If we do a poor job at the sampling stage of the research process, the integrity of the entire project is at risk.

II TYPES OF SAMPLING TECHNIQUES

SIMPLE RANDOM SAMPLING

It is the most simple and widely used sampling technique. In this sampling technique each member of the population for the same probability of being included in the sample. In random sampling population is numbered from 1 to N and a series of numbers are drawn in a random fashion. Usually three methods are used to draw random samples. These are Lottery method, Tippet's number method and Computer based generation of random numbers.

Advantages of Random Sampling

1. It is free from bias.
2. It is more representative.
3. It does not depend upon the prior knowledge of the population.
4. It facilitates the anaylsis of data which include use of inferential, comparative, relationship and predictive statistics.
5. It is easy to calculate the sampling error in this method.

Disadvantages of Random Sampling

1. The selection fo sample becomes difficult when the population units are widely dispersed.
2. In many studies it is difficult to have a population which is completely catalogued.
3. Random sampling is not suitable if the population is heterogeneous.
4. Random sampling is subjected to more errors or the same sample size than they are found in stratified sampling.

STRATIFED SAMPLING

In stratified sampling the whole population is divided into number of homogeneous groups ant then from each group a proportionate sample is drawn using random method. The sample so obtained from each group together is known as stratified sample.

Process of Stratification

The reliability of stratified sampling depends upon formation of group. If a proper stratification is made even a small sample. Following points may be kept in mind while constructing group.

1. Criteria for stratification.
2. Stratum size.
3. Homogeneity of the strata must be covered.

4. Strata should be non overlapping.

Kinds of Stratified Sampling

There are three types of stratified samling.

1. Proportional stratified sample.
2. Disproportionate stratified sample.
3. Stratified weighted sampling.

Advantages of Stratified Sampling

1. It provides greater control over the sample as no portion of the population is left out being represented in the sample due to stratification.
2. If stratum is perfectly homogeneous even a small sample would serve the purpose.
3. Replacement of unit is possible in case of no response. If an athlete or subject refuses to cooperate with the investigator, this may be replaced by another individual from the same stratum.

Disadvantages of Stratified Sampling

1. Faulty stratification may lead to bias in the sample.
2. In stratified sampling a deliberate attempts has to be made to attain a proportionate sample.
3. In case of no clear cut strategies for stratification it is difficult to put a particular case ofin a stratum.
4. In the absence of information on proportion of population in each category drawing the sample becomes difficult.

SYSTEMATIC SAMPLING

Systematic sampling is suitable when the list of sampling units is available. Soppose tat N units of the population are numbered to 1 to N and sample of size is to be selected such that (N/n) =k, k being an integer. Systematic sampling then consists in selecting at random a unit from the first k units and then selecting every subsequent k unit from the list. Systematic sampling is considered to be mixed sampling, which is partly probabilistic and partly non probabilistic. Probabilistic, because the first unit is selected at random from the first k units and non probabilistic because the other members in the sample are fixed on the choice of the first member. If a sample is to be drawn from the list of the students in college or from a telephone directory, systematic sampling would be suitable in such situations.

SEQUENTIAL SAMPLING

In sequential sampling samples is drawn one by one. The idea is to draw the minimum sample required for drawing the conclusion about the hypothesis to tested. Under this sampling plan a very small sample is taken alpha and beta, the two types of error are computed. On the basis of criteria involving alpha and beta, the decision of either accepting or rejecting the hypothesis is tested. If none of the decision follows from the taken sample, its size is increased by one more unit and entire process of testing is repeated. The process of increasing the sample size is stopped if either of the decision viz. accepting the null hypothesis or rejecting the null hypothesis follows. Sample so selected is known as sequential sampling. Such sampling plan is preferred if either the cost of enumerating a sample is high or if the term included in the sample is destroyed after testing.

CLUSTER SAMPLING

Cluster sampling is essentially a simple random sampling. The only difference between cluster and random sampling is in the size of the basic unit being investigated. In cluster sampling an ultimate sampling unit in the population is a cluster of many. For example a family, college team or university team may be an ultimate sampling unit in the experiment. All these ultimate sampling units are the cluster of units for example family consists of many members and college team may include many athletes. In cluster sampling the cluster is defined in advance and then a random sample id drawn either by means of simple random sampling or stratified sampling. The sample so obtained is known as cluster sample.

PURPOSIVE SAMPLING

In this sampling, individuals are selected according to some purposive principle. For example, an observer who wishes to select a sample of students of height in the range of 5.4 ft, from a college looks to the whole lot of students and then chooses students only from the required height group. It is normally claimed that the purposive sampling is more likely to give a representative sample. But in most cases it may involve some bias of unknown magnitude.

The advantage of this kind o sampling is that the investigator can pick up the variables with the objective in view. Further a small purposive sample can be a good representative. On the other hand there is a lot of scope for subjectivity in this method. And also an investigator may not have full knowledge of the population which is one of the prerequisite in this method.

CONCLUSION

The conclusion of the study was that the researchers usually cannot make direct observations of every individual in the population which they are studying. Instead, they collect data from a subset and use those observations to make interferences about the entire population. Ideally, the sample corresponds to the larger population on the characteristics of interest. In that case, the researcher's conclusion from the sample is probably applicable to the

entire population. And to draw a better sample, the different types of sampling techniques are being used by the researchers in the field of physical education and sports.

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