

4th sem (Hons - SEC-2)

SEC2: Statistical reasoning for sociology

2. Basic Concepts in Statistics

Some of the relevant basic concepts in statistics are population, sample, parameter, statistic and variable (s). These are discussed in detail as follows:

Population: This term can be used to describe the persons, objects, elements, animals or even reactions that display a pattern of characteristics that is unique. It can also be explained as set of persons, objects, elements animals, reactions that the researcher wants to study. If a researcher wants to carry out a study on adolescents in New Delhi, then his/ her population will be all the adolescents in New Delhi. Population can be finite or infinite in nature (Mohanty and Misra, 2016, page 3). An example of finite population is number of students in a school who have failed in mathematics. And an example of infinite populations would be number of stars in the sky.

Sample: In simple terms sample can be defined as the group of individuals who participate in the research. If we take the example of adolescents in New Delhi, discussed above, it is not feasible for the researcher to contact and collect data from all the adolescents in New Delhi. Thus, the researcher will take a sample (preferably representative) from that population. To take another example, in a cold drink factory, if the quality inspector wants to find out if the quality and taste of the cold drink is adequate, he/she will not test all the bottles of cold drink, but take a sample and test the same and preferably this sample is taken randomly.

Thus, a sample is a smaller group from the population that participates in the research. It is important that the sample is representative of the population, that is, it is as much as possible similar to the population or possesses the same characteristics or elements as the population (Mohanty and Misra, 2016). Thus, sampling techniques are relevant in research, which help in selection of sample. Sampling techniques can be categorised in to probability sampling and non probability sampling (refer to table 1.1).

Parameter: A parameter can be termed as a value that provides information about the population that is investigated in the research. It can be described as "a measure of the population and refers to the indices of a central value, dispersion, correlation and so on of all the individuals of the population" (Mohanty and Misra, 2016, page 3). For example, if a researcher wants to know mean weight of newly born infants in India in a given year, this can be termed as a parameter as it describes the weight of all the newly born infants in India in a given year. An exact parameter is not always easy to obtain and any parameter will have a statistic.

Statistic: As aspects of a population are measured by a parameter, aspects of a sample are measured by statistic. Thus, the researcher will measure the weight

of say 500 newly born infants (a sample representing all the newborn infants) in a given year and work out a mean weight. This mean weight can be termed as a statistic.

Variable(s): Besides the above, yet another important term that we need to discuss is variable. Variable means something that varies. It can also be explained as quantity or a number that will vary or will have different values. In the introduction section, a study on emotional intelligence and self esteem of adolescents in India was mentioned. In this study, emotional intelligence and self esteem can be termed as variables. Emotional intelligence can be high or low as can self esteem be. Both these variables can possess varied values. Even gender can be termed as a variable because it will vary in terms of males or females.