Research Methodology

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# Importance of Sampling and Sampling Frame

The population is the actual phenomenon or the large reality about which you want to comment or study. The population is what the researcher is trying to measure (e.g. purchasers of a certain product), and the sampling frame is the group of individuals who you are trying to sample from (e.g. people who have an email address). One may not be able to capture all purchasers through people who have email (there are plenty of people who don't have an email), but one can get close. In most of the research work, one does not know the universe or even when it is known, it would be too expensive to study the entire universe. Sampling itself is the most critical part of the research in all the studies, it is the motherhood of any research, and it is generally the first step with which a researcher begins research (Gentles, Charles, Ploeg, & McKibbon, 2015). It ought to be strong to support the foundation; hence sampling is a very crucial step in research that has to be sorted out very carefully before listing some objects as the focus of interest.

There may be several variables that affect the study variable. If one does not sample from all categories, then the final conclusions may be flawed. A sample frame is a list of objects from the population that could be your potential sample. Sample, on the other hand, is a sample subset chosen from the sampling frame (Gentles, Charles, Ploeg, & McKibbon, 2015). When we take samples of a population of things, we want our sample to be representative of the population. In other words, the researcher wants the sample to be free from bias, or speaking technically, they want the random variation to be the only source of deviation in our population. Sampling frame refers to a list, map or other specification of the sampling units, which constitute the available information about the designated population for a particular scheme. In the absence of a good sampling frame, that is not adequate to meet the need; it results in sampling error consequently impacting the results of the study. Sampling error refers to the part of the difference between population value and estimate, derived from a sample. This error can be reduced by increasing the size of the sample.

In addition, sample frames are just an acknowledgment that (for pragmatic reasons) researchers often have to sample from a subset of a population, not from the population in its entirety. Thus they need to be aware of what their sample frame is so that they do not unintentionally introduce a bias in our results. The ultimate aim of a research process is to compute associations or correlations from a group under study whose results can be inferred to define the impacts in a larger and general population.

# Impacts of Poorly Specified Sampling Frame on the Research Process

As discussed above, the sampling technique and accuracy in the sampling methods play an imperative role in the quality of research outcomes and results. Poorly specified sampling frame results in the frame error, it is a major problem because if the sample is drawn from such a frame, it may lack the representation of the population of interest, from which the sample is drawn. Such error results in a biased estimate of the population under study. Thus, the aim of researchers is to minimize or avoid bias in the sampling frame. The error arising from poor or inaccurate sampling is also referred to as sampling error. Sampling error is the expected deviation of a sample estimate from the population parameter. In this case, the researcher is not able to evaluate the entire population and fails to capture the sample that is the true representative of that population. Nevertheless during the sampling process if the researcher systematically or deliberately excludes certain part of the population and proceed their sampling for getting information, then the sample estimate also differs from the population parameter which is known as bias. The poorly specified sampling frame can result in negative instances such as the exploitation of the unprofitable things and leading to incompetence in the application of the results of studies.

# Convenience Sampling Validity

Convenience Sampling (also known as availability sampling) is a non-probability / non-random sampling method used to generate samples according to the ease of access, readiness to be part of the sample, accessibility at a specified time slot or any other practical requirements of a specific component (Murphy, Staffileno, & Foreman, 2018). The researcher selects participants based on closeness and does not consider whether or not they constitute the entire population. Using this method, they possibly can observe habits, views, and viewpoints. This strategy of collecting sample has definitely some clear advantages in terms of saving time and cost. In addition, it is the easiest, least expensive to implement, and thus it is very popular in developmental research.

However, there are many demerits of using this sampling technique, one of the common disadvantages is that they generally involve a lesser number of underrepresented sociodemographic subgroups; as a result, it is not easy to detect subgroup differences in a sociodemographic factor. In addition, these underrepresented sociodemographic subgroups, though in the smaller number but introduce variations in the sample. This results in the statistical noise in the sample owing to the variation in the data. Thus, it is reasonable to say that the use of convenience sampling in the research studies may be partly responsible for a few inconsistent effects that impact developmental science. Albeit, convenience sampling is the most common sampling technique, but it has some scientific disadvantages that negatively impacts the practical advantages that this study provides (Bornstein, Jager, & Putnick, 2013). Comparative to population-based probability sampling, this sampling technique is undoubtfully easy to implement, and unlike probability sampling, this technique results in the estimates that lack the ability to be generalized on a larger population, and any identifiable target population. It also offers insufficient power to sense variances amid sociodemographic subgroups hence producing noise in the data. These demerits do not make the studies invalid that employs convenience sampling. However, studies report that when researchers use this sampling technique, they may not consider conventional or heterogeneous but should consider homogeneous convenience. This sampling technique should not be discouraged owing to the benefits it offers in developmental science (Jager, Putnick, & Bornstein, 2017).

External validity referred to the generalizability of study findings across different settings, populations, outcomes, and treatments. Random sampling is a sampling technique of drawing a sample from a population wherein the selection is grounded on chance, and every single component of the population is characterized by a known, non-zero probability of being selected. Random sampling is a preferred method in which external validity can be optimized to the maximum level as in random sampling each respondent has an equal chance to participate in a study. Random sampling is an unbiased sampling method in which a population is identified to which the study results need to be generalized. Then a fair sampling unit (participants) are selected, and due to this unbiasedness of the random sampling method, there is strong evidence for external validity.

# References

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