**Sampling techniques & Cautions about sample surveys:**

**Sampling:** involves part of population to learn about the whole population. Very often the best option.

A **census** attempts to contact every individual in a population . these are very expensive and time consuming

**Sampling methods :**

**1.Voluntary Response**

**2. Convenience Sampling** is surveying those people who are easiest to reach or near by. This is also not good method.

These two methods often yield biased results, systematically favoring certain outcomes.

The remedy for bias in sampling is to allow random impersonal chance to do the sampling.

**Good Techniques**:

* **Simple Random Sample(SRS)**

1. Every individual has the same chance of being chosen.
2. Every set of n individuals has the same choice of being chosen.

SRS is one type of probability sampling : A sample chosen by chance. Not all give every individual the same chance of being chosen.

* **Stratified Random Samples:** are good for selecting from a large population, or ehne you think different strata will yield very different results**.**

1. Divide population into strata that are similar in some way that is important to the response variable.
2. Take an SRS from each of the strata.
3. Combine to make one full sample

A stratified random sample can give good data about each strata and the entire population. If individuals in each strata are less varied than the population as a whole, a stratified sample can produce better info. Than the SRS of the same survey.

* **Cluster Sampling:**  Often used for practical reasons

1. Divide population into clusters
2. Randomly select some of the clusters
3. All individuals in each chosen cluster are selected to be in the sample

* **Multi-Stage Sampling:** Multiple stages of stratified Random Sampling to break down massive population into manageable pieces.

**Cautions**:

**Undercoverage:** when a group is left out

**Nonresponse:** Individual selected in the sample cannot be contacted or refuses to cooperate

**Response bias**: can be caused by behavior of interviewer, embarrassment about their true answer, race or gender of interviewer, faulty memory about long past events.

**Wording bias**: When question includes leading information making one response more likely.

**Inference about population**: Making conclusion about population from a sample. These samples are only estimates and have variations in their results. If you repeat a sample, even if it is just flipping a coin, you will probably not get the same result. This variability is what makes sample distributions whose mean will equal the population parameter is the sample is unbiased.

Larger samples have less variability and thus are more accurate. Surveys and experiments can actually be too accurate/sensitive.

As long as the population is at least 10 times greater than the sample size it is only the size of the sample that determines the variability of the sample