Glossary

1. **Chi square distribution**
   The chi-squared distribution (also chi-square or χ^2-distribution) with k degrees of freedom is the distribution of a sum of the squares of k independent standard normal random variables. It is one of the most widely used probability distributions in inferential statistics, e.g., in hypothesis testing or in construction of confidence intervals.

2. **Confidence interval**
   Confidence interval (CI) is a type of interval estimate of a population parameter and is used to indicate the reliability of an estimate. A confidence interval gives an estimated range of values which is likely to include an unknown population parameter, the estimated range being calculated from a given set of sample data.

3. **Confidence level**
   The probability part of a confidence interval is called a confidence level. The confidence level describes the likelihood that a particular sampling method will produce a confidence interval that includes the true population parameter.

4. **Degrees of freedom**
   In statistics, the number of degrees of freedom is the number of values in the final calculation of a statistic that are free to vary. The number of independent ways by which a dynamical system can move without violating any constraint imposed on it, is called degree of freedom.

5. **F distribution**
   The F-distribution is a continuous probability distribution it is also known as Snedecor's F distribution or the Fisher-Snedecor distribution (after R.A. Fisher and George W. Snedecor). The F-distribution arises frequently as the null distribution of a test statistic, most notably in the analysis of variance.

6. **Interval estimation**
   Interval estimation is the use of sample data to calculate an interval of possible (or probable) values of an unknown population parameter, in contrast to point estimation, which is a single number.

7. **Mean**
   For a data set, the arithmetic mean is equal to the sum of the values divided by the number of values. The arithmetic mean of a set of numbers x_1, x_2, ..., x_n is typically denoted by x bar .If the data set were based on a series of observations obtained by sampling from a statistical population, the arithmetic mean is termed the sample mean (x bar) to distinguish it from the population mean (**mu** or **mu** $_{x)}$.

8. **Normal Distribution**
   A normal distribution is a function that represents the distribution of many random variables as a symmetrical bell-shaped graph.

9. **Parameter**
   A statistical parameter is a parameter that indexes a family of probability distributions. It can be regarded as a numerical characteristic of a population or a model.

10. **Population**
    A population is a collection of units being studied. Units can be people, places, objects, procedures, or many other things. Much of statistics is concerned with estimating numerical properties (parameters) of an entire population from a random sample of units from the population.

11. **Sampling distribution**
    This is the probability distribution, under repeated sampling of the population, of a given statistic.

12. **Sigma**
    ∑ "sigma" = summation. This is upper-case sigma. Lower-case sigma σ means standard deviation of a population. The order of operations, such as $\sum x^2$ as opposed to $(\sum x)^2$ should be given careful consideration.

13. **Standard deviation**
    This is the most commonly used measure of statistical dispersion. It is the square root of the variance, and is generally written as sigma

14. **Summation**
    Summation is the operation of adding a sequence of numbers; the result is their sum or total.

15. **Variance**
    The variance is a measure of how far a set of numbers is spread out. It is one of several descriptors of a probability distribution, describing how far the numbers lie from the mean (expected value). In particular, the variance is one of the moments of a distribution.