Glossary

1. **Assumptions**
   Assumptions are suspected cause and effect relationships, or estimates of the existence of a fact from the known existence of other fact(s). These are useful in providing basis for action and in creating "what if" scenarios to simulate different realities or possible situations.

2. **Bernoulli random variable**
   In probability theory and statistics, the Bernoulli distribution, named after Swiss scientist Jacob Bernoulli, is a discrete probability distribution, which takes value 1 with success probability p and value 0 with failure probability q=1-p. So if X is a random variable with this distribution, we have:
   Pr(X=1)=1-Pr(X=0)=1-q=p.

3. **Central Limit Theorem**
   In probability theory, the central limit theorem (CLT) states that, given certain conditions, the mean of a sufficiently large number of independent random variables, each with finite mean and variance, will be approximately normally distributed. The central limit theorem has a number of variants. In its common form, the random variables must be identically distributed. In variants, convergence of the mean to the normal distribution also occurs for non-identical distributions, given that they comply with certain conditions.

4. **Estimator**
   The term estimator refers to the formula or expression used to calculate the estimate, the actual numerical value estimate of the population parameter in a particular problem.

5. **Implication**
   Implication is the conclusion that can be drawn from something, although it is not explicitly stated.

6. **Normal distribution**
   In probability theory, the normal (or Gaussian) distribution is a continuous probability distribution that has a bell-shaped probability density function, known as the Gaussian function or informally as the bell curve.

7. **Normal theorem**
   If the R.Vs X^1,X^2, etc ,X^n are independent and identically distributed as Normal (mu, sigma square) then x bar is equal to summation xi by n is distributed as Normal (mu, sigma square by n)

8. **Probability density function**

Probability density function (pdf), or density of a continuous random variable, is a function that describes the relative likelihood for this random variable to take on a given value. The probability for the random variable to fall within a particular region is given by the integral of this variable's density over the region. The probability density function is nonnegative everywhere, and its integral over the entire space is equal to one.

9. **Probability distribution**

Probability distribution is a function that gives the probability of all elements in a given space.

10. **Random variable**

In probability and statistics, a random variable or stochastic variable is a variable whose value is subject to variations due to chance (i.e. randomness, in a mathematical sense). As opposed to other mathematical variables, a random variable conceptually does not have a single, fixed value rather; it can take on a set of possible different values, each with an associated probability.

11. **Sample 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, pronounced "*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) to distinguish it from the population mean (μ or μx)

12. **Sampling distribution**

A probability distribution of a statistic obtained through a large number of samples drawn from a specific population. The sampling distribution of a given population is the distribution of frequencies of a range of different outcomes that could possibly occur for a statistic of a population.

13. **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.

14. **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 σ (sigma).

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.