Glossary

1. **Bivariate**
   Bivariate data is data that has two variables. The quantities from these two variables are often represented using a scatter plot. This is done so that the relationship (if any) between the variables is easily seen

2. **Alternative Hypothesis**
   The alternative hypothesis, H_1, is a statement of what a statistical hypothesis test is set up to establish. For example, in a clinical trial of a new drug, the alternative hypothesis might be that the new drug has a different effect, on average, compared to that of the current drug.

3. **Correlation**
   Correlation is a statistical technique that can show whether and how strongly pairs of variables are related.

4. **Correlation coefficient**
   Correlation coefficient is a measure of the interdependence of two random variables that ranges in value from -1 to +1, indicating perfect negative correlation at -1, absence of correlation at zero, and perfect positive correlation at +1. This is also called as coefficient of correlation.

5. **Critical Value**
   The critical value in a hypothesis test is the value of the test statistic beyond which we would reject the null hypothesis. The critical value is set so that the probability that the test statistic is beyond the critical value is at most equal to the significance level if the null hypothesis be true.

6. **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.

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**

   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.

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9. **Null Hypothesis**

   The null hypothesis, H_0, represents a theory that has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved. For example, in a clinical trial of a new drug, the null hypothesis might be that the new drug is no better, on average, than the current drug.

10. **One-Tailed Test**

    A test of a statistical hypothesis, where the region of rejection is on only one side of the sampling distribution, is called a one-tailed test.

11. **Regression**

    Regression analysis includes many techniques for modelling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

12. **Summation**

    Summation is the operation of adding a sequence of numbers; the result is their sum or total. It is frequently necessary in statistical and psychometric calculations to take the sum of a number of values. The symbol used to indicate this operation of adding up a group of numbers is a capital Greek Sigma – Σ

13. **Two-Tailed Test**

    A two-tailed test is a hypothesis test in which the null hypothesis is rejected if the observed sample statistic is more extreme than the critical value in either direction (higher than the positive critical value or lower than the negative critical value). A two-tailed test this has two critical regions.

14. **Type I Error**

    In a hypothesis test, a type I error occurs when the null hypothesis is rejected when it is in fact true; that is, H0 is wrongly rejected.

15. Variance

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).