Glossary

1. Alternative Hypothesis

The alternative hypothesis, H1, 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.

2. Estimate

An estimate is an indication of the value of an unknown quantity based on observed data.

3. Nonparametric Tests

In statistical inference procedures (hypothesis tests and confidence intervals), nonparametric procedures are those that are relatively free of assumptions about population parameters.

4. 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.

5. Parametric Tests

Parametric procedures are those that incorporate assumptions about population parameters.

6. Power

The power of a statistical hypothesis test measures the test's ability to reject the null hypothesis when it is actually false - that is, to make a correct decision. In other words, the power of a hypothesis test is the probability of not committing a type II error. It is calculated by subtracting the probability of a type II error from 1, usually expressed as: Power = 1 - P (type II error) = $(1 - \beta)$

7. Region of Acceptance

The range of values that leads the researcher to accept the null hypothesis is called the region of acceptance.

8. Region of rejection

The range of values that leads the researcher to reject the null hypothesis is called the region of rejection.

9. Regression Analysis:

Regression analysis provides a "best-fit" mathematical equation for the relationship between the dependent variable (response) and independent variable(s) (covariates).

10. Sample mean

The sample mean is an estimator available for estimating the population mean. It is a measure of location, commonly called the average, often symbolised \bar{x} .

11. Sampling Distribution

The sampling distribution describes probabilities associated with a statistic when a random sample is drawn from a population. The sampling distribution is the probability distribution or probability density function of the statistic.

12. Significance Level

The significance level of a statistical hypothesis test is a fixed probability of wrongly rejecting the null hypothesis H0, if it is in fact true.

13. Statistical Hypothesis

A statistical hypothesis test is a method of making decisions using data, whether from a controlled experiment or an observational study (not controlled). In statistics, a result is called statistically significant if it is unlikely to have occurred by chance alone, according to a predetermined threshold probability, the significance level.

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. Type II Error

In a hypothesis test, a type II error occurs when the null hypothesis H0, is not rejected when it is in fact false.