

Distributions

Frequency Distribution

A frequency distribution is a visual display that organises and presents frequency counts so that the information can be interpreted more easily. Frequency distributions can show absolute frequencies or relative frequencies, such as proportions or percentages.

Probability Distributions

A probability distribution is the mathematical function that gives the probabilities of the occurrence of all the different possible outcomes of an experiment. It is the mathematical description of the sample space. In essence it is an idealised frequency distribution. The area under a probability distribution is “1” – because it covers every conceivable outcome.

At GCSE level we study just two distributions.

Binomial

The binomial distribution occurs when the number of observations n is fixed, each observation is independent and has only two outcomes represents one of two outcomes ("success" or "failure"). The probability of "success" p is the same for each outcome. A single success/failure experiment is called a Bernoulli trial

Gaussian (Normal)

For n large, the binomial distribution approximates to the Gaussian distribution.

Other distributions that you may come across include

Poisson

is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time if these events occur with a known constant mean rate and independently of the time since the last event.

t-Distribution

A continuous probability distribution is used for small sample sizes when the variance is unknown. When t is infinite it becomes the normal distribution.

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