## probability distribution

A statistical model that maps events to probabilities, i.e. it estimates ( $\rightarrow$ estimate) the probability of a given event.

Discrete probability distributions have a sample space consisting of individual outcomes. Their probability mass functions (PMF) deliver the probability of a specific outcome to occur and their cumulative distribution functions compute the probability of a range of outcomes to occur. The sample space of discrete distributions may consist of categories rather than numeric data.

Continuous probability distributions have a sample space consisting of an interval of real numbers. They use their CDFs to estimate the probability of an outcome falling into a given range. Their counterpart to the PMF is the probability density function (PDF), but it is not usually used to compute probabilities.

Common discrete probability distribution include the (discrete) uniform distribution, the geometric distribution, the binomial distribution, and the Poisson distribution. Common continuous probability distribution include the normal distribution, the $\chi^{2}$-distribution ( $\rightarrow$ chi-square distribution), the $t$-distribution, and the lognormal distribution.

