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 χ^2 -distribution (\rightarrow *chi-square distribution*), the *t-distribution*, and the *lognormal distribution*.