The Normal Probability Distribution

A random variable X has a normal distribution if its probability density is given by:

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} \exp\left\{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2\right\}$$

where

- μ is the mean of the distribution and
- σ is the standard error of the distribution