How we can quantify h(x)?

- Arithmetic mean (also known as the expectation value),

$$\mu = E(x) = \int_{-\infty}^{\infty} x h(x)\,dx$$

Location parameter

- Variance,

$$V = \int_{-\infty}^{\infty} (x-\mu)^2 h(x)\,dx$$

$$p(x|\mu,\gamma) = \frac{1}{\pi\gamma}\left(\frac{\gamma^2}{\gamma^2 + (x-\mu)^2}\right)$$

What is σ for the Cauchy distr. above?

- Standard deviation,

$$\sigma = \sqrt{V}$$

Scale parameter

- Skewness,

$$\Sigma = \int_{-\infty}^{\infty} \left(\frac{x-\mu}{\sigma}\right)^3 h(x)\,dx$$

- Kurtosis,

$$K = \int_{-\infty}^{\infty} \left(\frac{x-\mu}{\sigma}\right)^4 h(x)\,dx - 3$$

Shape parameters

- p% quantiles (p is called a percentile), q_p,

$$\frac{p}{100} = \int_{-\infty}^{q_p} h(x)\,dx$$

Parameters describing cumulative distribution