Gamma Distribution

Applications

The gamma distribution can be used a range of disciplines including queuing models, climatology, and financial services.

- The amount of rainfall accumulated in a reservoir
- The size of loan defaults or aggregate insurance claims
- The flow of items through manufacturing and distribution processes
- The load on web servers

Gamma Distribution

There are three different parametrizations in common use:

- With a shape parameter k and a scale parameter θ.
- With a shape parameter $\alpha = k$ and an inverse scale parameter $\beta = 1/\theta$, called a rate parameter.
- With a shape parameter k and a mean parameter $\mu = k/\beta$.

Gamma Distribution

Probability density function (pdf)

$$\frac{1}{\Gamma(k)\theta^k}x^{k-1}e^{-\frac{x}{\theta}}$$

$$\frac{\beta^\alpha}{\Gamma(\alpha)}x^{\alpha-1}e^{-\beta x}$$