DISCRETE

Name	$f(i)$	Range	Mean	Var	PGF
Binomial	$\binom{n}{i}p^i q^{n-i}$	$0..n$	np	npq	$(q+pz)^n$
Geometric	pq^{i-1}	$1..\infty$	$\frac{1}{p}$	$\frac{1}{p}\left(\frac{1}{p}-1\right)$	$\frac{pz}{1-qz}$
Negative Binomial	$\binom{i-1}{k-1}p^k q^{i-k}$	$k..\infty$	$\frac{k}{p}$	$\frac{k}{p}\left(\frac{1}{p}-1\right)$	$\left(\frac{pz}{1-qz}\right)^k$
Poisson	$\frac{\Lambda^i}{i!}e^{-\Lambda}$	$0..\infty$	Λ	Λ	$e^{\Lambda(z-1)}$
Hypergeometric	$\frac{\binom{K}{i}\binom{N-K}{n-i}}{\binom{N}{n}}$	complicated	$n\frac{K}{N}$	$n\frac{K(N-K)}{N^2}\frac{N-n}{N-1}$	complicated

CONTINUOUS

Name	$f(x)$	Range	Mean	Var	MGF
Uniform	$\frac{1}{b-a}$	$a..b$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$	$\frac{e^{bu}-e^{au}}{u(b-a)}$
Exponential	$\frac{1}{\beta}e^{-x/\beta}$	$0..\infty$	β	β^2	$\frac{1}{1-\beta\cdot u}$
Gamma	$\frac{x^{k-1}}{(k-1)!\beta^k}e^{-x/\beta}$	$0..\infty$	$k\beta$	$k\beta^2$	$\left(\frac{1}{1-\beta\cdot u}\right)^k$
Normal	$\frac{1}{\sqrt{2\pi}\sigma}\exp\left[-\frac{(x-\mu)^2}{2\sigma^2}\right]$	$-\infty..\infty$	μ	σ^2	$\exp\left[\mu\cdot u+\frac{u^2}{2}\sigma^2\right]$

MULTIVARIATE

Discrete

Multinomial: X, Y and Z say.

$$\Pr(X=i,Y=j,Z=k)\equiv f_{XYZ}(i,j,k)=\binom{n}{i,j,k}p_x^i p_y^j p_z^k$$

and

$$\operatorname{Cov}(X,Y)=-np_xp_y$$

Multivariate hyporgeometric:

$$\Pr(X=i,Y=j,Z=k)=\frac{\binom{K_x}{i}\binom{K_y}{j}\binom{K_z}{k}}{\binom{N}{n}}$$

and

$$\operatorname{Cov}(X,Y)=-n\cdot\frac{K_x}{N}\cdot\frac{K_y}{N}\cdot\frac{N-n}{N-1}$$

Continuous

Bi-variate Normal (standardized):

$$f(z_1, z_2) = \frac{\exp\left(-\frac{z_1^2+z_2^2-2\rho z_1 z_2}{2(1-\rho^2)}\right)}{2\pi\sqrt{1-\rho^2}}$$