Summary of Distributions

Name	Support	p.d.f. - p.m.f.	Mean	Variance	m.g.f.
Discrete Uniform	$x = x_1, \ldots, x_k$	$\frac{1}{k}$	$\frac{1}{k}\sum x_i$	$\frac{1}{k}\sum(x_i-\mu)^2$	$\frac{1}{k}\sum e^{tx_i}$
Bernoulli $(1,\theta)$	$x = 0, 1$	$\theta^x(1-\theta)^{1-x}$	θ	$\theta(1-\theta)$	$e^t\theta + (1-\theta)$
Binomial (n,θ)	$x = 0, 1, \ldots, n$	$\binom{n}{x}\theta^x(1-\theta)^{n-x}$	$n\theta$	$n\theta(1-\theta)$	$\left(e^t\theta + (1-\theta)\right)^n$
Geometric (θ)	$x = 1, 2, \ldots$	$\theta(1-\theta)^{x-1}$	$\frac{1}{\theta}$	$\frac{1-\theta}{\theta^2}$	$\frac{\theta e^t}{1-e^t(1-\theta)}$
Negative Binomial (k,θ)	$x = k, k+1, \ldots$	$\binom{x-1}{k-1}\theta^k(1-\theta)^{x-k}$	$\frac{k}{\theta}$	$\frac{k(1-\theta)}{\theta^2}$	$\frac{\theta e^t}{(1-e^t(1-\theta))^k}$
Hypergeometric (N,n,k)	$x \le k$ $n-x \le N-k$	$\frac{\binom{k}{x}\binom{N-k}{n-x}}{\binom{N}{n}}$	$\frac{nk}{N}$		
Poisson (λ)	$x = 0, 1, \ldots$	$\frac{e^{-\lambda}\lambda^x}{x!}$	λ	λ	$e^{\lambda(e^t-1)}$
Continuous Uniform (α,β)	$\alpha < x < \beta$	$\frac{1}{\beta-\alpha}$	$\frac{\alpha+\beta}{2}$	$\frac{(\beta-\alpha)^2}{12}$	$\frac{e^{t\beta}-e^{t\alpha}}{t(\beta-\alpha)}$
Exponential (θ)	$x > 0$	$\frac{1}{\theta}e^{-x/\theta}$	θ	θ^2	$(1-t\theta)^{-1}$
Gamma (α,β)	$x > 0$	$\frac{1}{\Gamma(\alpha)\beta^\alpha}x^{\alpha-1}e^{-x/\beta}$	$\alpha\beta$	$\alpha\beta^2$	$(1-\beta t)^{-\alpha}$
Normal (μ,σ^2)	$-\infty < x < \infty$	$\frac{1}{\sqrt{2\pi}\sigma}e^{-(x-\mu)^2/2\sigma^2}$	μ	σ^2	$e^{\mu t+\sigma^2t^2/2}$