

DISCRETE DISTRIBUTIONS							
	$\mathcal{Y}$	PARAMETERS	$p(y)$	$F(y)$	$\mathbb{E}[Y]$	$\mathbb{V}[Y]$	$m(t)$
<i>Bernoulli</i> (p)	$\{0, 1\}$	$p \in (0, 1)$	$p^y(1-p)^{1-y}$		p	$p(1-p)$	$1-p+pe^t$
<i>Binomial</i> (n, p)	$\{0, 1, \dots, n\}$	$n \in \mathbb{Z}^+, p \in (0, 1)$	$\binom{n}{y} p^y(1-p)^{n-y}$		np	$np(1-p)$	$(1-p+pe^t)^n$
<i>Poisson</i> (λ)	$\{0, 1, 2, \dots\}$	$\lambda \in \mathbb{R}^+$	$\frac{e^{-\lambda}\lambda^y}{y!}$		λ	λ	$\exp\{\lambda(e^t-1)\}$
<i>Geometric</i> (p)	$\{1, 2, \dots\}$	$p \in (0, 1)$	$(1-p)^{y-1}p$	$1-(1-p)^y$	$\frac{1}{p}$	$\frac{(1-p)}{p^2}$	$\frac{pe^t}{1-e^t(1-p)}$
<i>NegBinomial</i> (r, p)	$\{r, r+1, \dots\}$	$r \in \mathbb{Z}^+, p \in (0, 1)$	$\binom{y-1}{r-1} p^r(1-p)^{y-r}$		$\frac{r}{p}$	$\frac{r(1-p)}{p^2}$	$\left(\frac{pe^t}{1-e^t(1-p)}\right)^r$
or	$\{0, 1, 2, \dots\}$	$r \in \mathbb{Z}^+, p \in (0, 1)$	$\binom{r+y-1}{r-1} p^r(1-p)^y$		$\frac{r(1-p)}{p}$	$\frac{r(1-p)}{p^2}$	$\left(\frac{p}{1-e^t(1-p)}\right)^r$
<i>Hypergeom</i> (N, r, n)	$\{\max\{0, n-N+r\}, \dots$ $\dots, \min\{n, r\}\}$	$N \geq r, n$	$\frac{\binom{r}{y}\binom{N-r}{n-y}}{\binom{N}{n}}$		$n\left(\frac{r}{N}\right)$	$n\left(\frac{r}{N}\right)\left(1-\frac{r}{N}\right)\left(\frac{N-n}{N-1}\right)$	
or			$\frac{\binom{n}{y}\binom{N-n}{r-y}}{\binom{N}{r}}$				

CONTINUOUS DISTRIBUTIONS							
	$\mathcal{Y}$	PARAMETERS	$p(y)$	$F(y)$	$\mathbb{E}[Y]$	$\mathbb{V}[Y]$	$m(t)$
<i>Uniform</i> (θ_1, θ_2) (standard model $\theta_1 = 0, \theta_2 = 1$)	(θ_1, θ_2)	$\theta_1 < \theta_2 \in \mathbb{R}$	$\frac{1}{\theta_2 - \theta_1}$	$\frac{y - \theta_1}{\theta_2 - \theta_1}$	$\frac{(\theta_1 + \theta_2)}{2}$	$\frac{(\theta_2 - \theta_1)^2}{12}$	$\frac{e^{\theta_2 t} - e^{\theta_1 t}}{t(\theta_2 - \theta_1)}$
<i>Exponential</i> (β) (standard model $\beta = 1$)	$\mathbb{R}^+$	$\beta \in \mathbb{R}^+$	$\frac{1}{\beta} e^{-y/\beta}$	$1 - e^{-y/\beta}$	β	β^2	$\left(\frac{1}{1 - \beta t}\right)$
<i>Gamma</i> (α, β) (standard model $\beta = 1$)	$\mathbb{R}^+$	$\alpha, \beta \in \mathbb{R}^+$	$\frac{1}{\beta^\alpha \Gamma(\alpha)} y^{\alpha-1} e^{-y/\beta}$ where $\Gamma(\alpha) = \int_0^\infty y^{\alpha-1} e^{-y} dy$		$\alpha\beta$	$\alpha\beta^2$	$\left(\frac{1}{1 - \beta t}\right)^\alpha$
<i>Normal</i> (μ, σ^2) (standard model $\mu = 0, \sigma = 1$)	$\mathbb{R}$	$\mu \in \mathbb{R}, \sigma \in \mathbb{R}^+$	$\frac{1}{\sqrt{2\pi}\sigma^2} \exp\left\{-\frac{(y - \mu)^2}{2\sigma^2}\right\}$		μ	σ^2	$\exp\left\{\mu t + \frac{\sigma^2 t^2}{2}\right\}$
<i>Beta</i> (α, β)	$(0, 1)$	$\alpha, \beta \in \mathbb{R}^+$	$\frac{\Gamma(\alpha + \beta)}{\Gamma(\alpha)\Gamma(\beta)} y^{\alpha-1} (1 - y)^{\beta-1}$		$\frac{\alpha}{\alpha + \beta}$	$\frac{\alpha\beta}{(\alpha + \beta)^2(\alpha + \beta + 1)}$	
<i>Weibull</i> (α, β) (standard model $\beta = 1$)	$\mathbb{R}^+$	$\alpha, \beta \in \mathbb{R}^+$	$\alpha\beta y^{\alpha-1} e^{-\beta y^\alpha}$	$1 - e^{-\beta y^\alpha}$	$\frac{\Gamma(1 + 1/\alpha)}{\beta^{1/\alpha}}$	$\frac{\Gamma(1 + 2/\alpha) - \Gamma(1 + 1/\alpha)^2}{\beta^{2/\alpha}}$	
<i>Student</i> (ν)	$\mathbb{R}$	$\nu \in \mathbb{R}^+$	$\frac{\Gamma((\nu + 1)/2)}{\Gamma(\nu/2) \sqrt{\pi\nu}} \{1 + y^2/\nu\}^{-(\nu+1)/2}$		0 (if $\nu > 1$)	$\frac{\nu}{\nu - 2}$ (if $\nu > 2$)	
<i>Pareto</i> (θ, α)	$\mathbb{R}^+$	$\theta, \alpha \in \mathbb{R}^+$	$\frac{\alpha\theta^\alpha}{(\theta + y)^{\alpha+1}}$	$1 - \left(\frac{\theta}{\theta + y}\right)^\alpha$	$\frac{\theta}{\alpha - 1}$ (if $\alpha > 1$)	$\frac{\alpha\theta^2}{(\alpha - 1)(\alpha - 2)}$ (if $\alpha > 2$)	

For linear transformation $X = \mu + \sigma Y$

$$f_X(x) = f_Y\left(\frac{x - \mu}{\sigma}\right) \frac{1}{\sigma} \quad F_X(x) = F_Y\left(\frac{x - \mu}{\sigma}\right) \quad m_X(t) = e^{\mu t} m_Y(\sigma t) \quad \mathbb{E}[X] = \mu + \sigma \mathbb{E}[Y] \quad \mathbb{V}[X] = \sigma^2 \mathbb{V}[Y]$$