Modelos Probabilísticos Comunes

Nombre	Distribución	Rango	Media	Varianza	Función generatriz de momentos
Binomial	$\binom{n}{x} p^x q^{n-x}$	$x = 0,1,\ldots n$	np	npq	$\left(q + pe^{\theta}\right)^n$
Geométrica	pq^{x-1}	$x = 1,2\ldots$	$\frac{1}{p}$	$\frac{q}{p^2}$	$\frac{pe^{\theta}}{1-qe^{\theta}}$
De Pascal (Binomial negativa)	$\binom{x-1}{r-1} p^r q^{x-r}$	$x = r, r+1,\ldots$	$\frac{r}{p}$	$\frac{rq}{p^2}$	$\left(\frac{pe^{\theta}}{1-qe^{\theta}}\right)^r$
Hipergeométrica	$\frac{\binom{r}{x}\binom{N-r}{n-x}}{\binom{N}{n}}$	$x = 0,1,\ldots n$ con $x \le r$, $n - x \le N$	$\frac{nr}{N}$	$\frac{nr(N-r)(N-n)}{N^2(N-1)}$	
De Poisson	$\frac{(\lambda t)^x e^{\lambda t}}{x!}$	$x = 0,1,2\ldots$	λt	λt	$e^{\lambda t\left(e^{\theta}-1\right)}$
Uniforme	$\frac{1}{b-a}$	$a \le x \le b$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$	$\frac{e^{b\theta} - e^{a\theta}}{(b-a)\theta}$
Exponencial	$\lambda e^{-\lambda x}$	$x \ge 0$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$	$\frac{\lambda}{\lambda - \theta}$
Gamma	$\frac{x^{\alpha-1} e^{-\frac{x}{\beta}}}{\beta^{\alpha}\Gamma(\alpha)}$	$x>0$	$\alpha\beta$	$\alpha\beta^2$	$(1-\beta\theta)^{-\alpha}$
Normal	$\frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$	$-\infty < x < \infty$	μ	σ^2	$e^{\mu\theta + \frac{1}{2}\sigma^2\theta^2}$
Ji-cuadrada	$\frac{\chi^{\frac{\nu}{2}-1}}{2^{\frac{\nu}{2}}\Gamma\left(\frac{\nu}{2}\right)} \cdot e^{-\frac{x}{2}}$	$x>0$	ν	2ν	$(1-2\theta)^{-\frac{\nu}{2}}$
t de Student	$\frac{\Gamma\left(\frac{\nu+1}{2}\right)}{\sqrt{\pi\nu}\,\Gamma\left(\frac{\nu}{2}\right)} \cdot \frac{1}{\left(\frac{t^2}{\nu}+1\right)^{\frac{\nu+1}{2}}}$	$-\infty < t < \infty$	0	$\frac{\nu}{\nu-2}; \quad \nu > 2$	
F (de Fisher)	$\frac{\Gamma\left(\frac{\nu_1+\nu_2}{2}\right)\nu_1^{\frac{\nu_1}{2}}\nu_2^{\frac{\nu_1}{2}}}{\Gamma\left(\frac{\nu_1}{2}\right)\Gamma\left(\frac{\nu_2}{2}\right)}\cdots \cdots f^{\left(\frac{\nu_1-2}{2}\right)}\left(\nu_2+\nu_1 f\right)^{-\frac{\nu_1+2}{2}}$	$0 < f < \infty$	$\frac{\nu_2}{\nu_2-2}; \nu_2 > 2$	$\frac{2\nu_2^2(\nu_1+\nu_2-2)}{\nu_1(\nu_2-2)^2(\nu_2-4)}; \nu_2 >$	
Erlang	$\frac{\lambda(\lambda t)^{r-1} e^{-\lambda x}}{(r-1)!}$	t>0	$\frac{r}{\lambda}$	$\frac{r}{\lambda^2}$	

VHGC