

Bernoulli Distribution

Parameters :

$$\theta \in (0, 1)$$

Support :

$$x \in \{0, 1\}$$

PMF :

$$Pr(x) = \begin{cases} 1 - \theta & \text{if } x = 0 \\ \theta & \text{if } x = 1 \end{cases}$$

Geometric Distribution

Parameters :

$$\theta \in (0, 1)$$

Support :

$$x \in \{0, 1, 2, \dots, \infty\}$$

$$k \in \{1, 2, 3, \dots, \infty\}$$

PMF :

$$Pr(x) = (1 - \theta)^x \theta$$

$$Pr(k) = (1 - \theta)^{k-1} \theta$$

Binomial Distribution

Parameters :

$$\theta \in (0, 1)$$

$$n \in \mathbf{N}_0$$

Support :

$$x \in \{0, 1, \dots, n\}$$

PMF :

$$Pr(x) = \binom{n}{x} \theta^x (1 - \theta)^{n-x}$$

$$Pr(x) = \frac{n!}{(n-x)! x!} \theta^x (1 - \theta)^{n-x}$$

Normal Distribution

Parameters :

$$\mu \in \mathbf{R}$$

$$\sigma > 0$$

Support :

$$x \in \mathbf{R}$$

PDF :

$$Pr(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

Beta Distribution

Parameters :

$$\alpha > 0$$

$$\beta > 0$$

Support :

$$x \in (0, 1)$$

PDF :

$$Pr(x) = \frac{x^{\alpha-1}(1-x)^{\beta-1}}{B(\alpha, \beta)}$$