Formuleblad Statistiek 1 2020

Discreet	**Kansfunctie**	**Verdelingsfunctie**	$\boldsymbol{\mu = E(\underline{x})}$	$\boldsymbol{\sigma^2 = Var(\underline{x})}$
Bernoulli/ alternatief	$\mathrm{P}(\underline{k} = k) = \pi^k(1-\pi)^{1-k}$, voor $k = 0, 1$		π	$\pi(1-\pi)$
Binomiaal	$\mathrm{P}(\underline{k} = k) = \binom{n}{k}\pi^k(1-\pi)^{n-k}$		$n\pi$	$n\pi(1-\pi)$
Hypergeometrisch	$\mathrm{P}(\underline{k} = k) = \frac{\binom{M}{k}\binom{N-M}{n-k}}{\binom{N}{n}}$		$n\pi$ met $\pi = \frac{M}{N}$	$n\pi(1-\pi)\frac{N-n}{N-1}$
Poisson	$\mathrm{P}(\underline{k} = k) = e^{-\mu}\frac{\mu^k}{k!}$		μ	μ
Continu	**Kansdichtheidsfunctie**			
Uniform	$f(x) = \begin{cases} \frac{1}{b-a}, & a \le x \le b \\ 0, & \text{elders} \end{cases}$		$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$
Normaal	$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$		μ	σ^2
Exponentieel	$f(x) = \begin{cases} \lambda e^{-\lambda t}, & x \ge 0 \\ 0, & x < 0 \end{cases}$	$f(x) = \begin{cases} 1 - e^{-\lambda t}, & x \ge 0 \\ 0, & x < 0 \end{cases}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$

Verwachtingswaarde

$$\begin{cases} \mu = E(\underline{k}) = \sum_k k\mathrm{P}(\underline{k} = k) & \text{(discreet)} \\ \mu = E(\underline{x}) = \int x f(x) dx & \text{(continu)} \end{cases}$$

Variantie

$$\sigma^2 = Var(\underline{x}) = E\left(\left(\underline{x} - E(\underline{x})\right)^2\right) = E(\underline{x}^2) - E(\underline{x})^2$$

Covariantie en correlatiecoëfficiënt

$$Cov(\underline{x}, \underline{y}) = E\left(\left(\underline{x} - E(\underline{x})\right) \cdot \left(\underline{y} - E(\underline{y})\right)\right) = E(\underline{x} \cdot \underline{y}) - E(\underline{x}) \cdot E(\underline{y})$$

$$\rho(\underline{x}, \underline{y}) = \frac{Cov(\underline{x}, \underline{y})}{\sqrt{Var(\underline{x}) \cdot Var(\underline{y})}}$$