Batez besteko aritmetikoa: $\bar{x} = \left(\sum_{i=1}^{k} x_i f_i \right) / n$; **Mediana:** *kasu jarraituan* $M_e = l_i + \dfrac{\frac{n}{2} - F_{i-1}}{f_i} \cdot d_i$; **Heina** $R = max(x_i) - min(x_i)$; **Bariantza:** $V(x) = \dfrac{\sum_{i=1}^{k} x_i^2 f_i}{n} - (\bar{x})^2$; **Desbideratze tipikoa**: $s(x) = \sqrt{V(x)}$; **Aldakuntza koefizientea:** $CV_x = s / \bar{x}$;

k. ordenako pertzentila: kasu jarraituan $P_k = l_i + \left(\dfrac{kn}{100} - F_{i-1} \right) d_i / f_i$; **Moda** kasu jarraituan $M_o = l_i + \dfrac{\Delta_1}{\Delta_1 + \Delta_2} \cdot d_i$,

$\Delta_1 = \dfrac{f_i}{d_i} - \dfrac{f_{i-1}}{d_{i-1}}$, $\Delta_2 = \dfrac{f_i}{d_i} - \dfrac{f_{i+1}}{d_{i+1}}$

$P(\bar{A}) = 1 - P(A)$; $A \subseteq B \Rightarrow P(A) \le P(B)$; $P(A \cup B) = P(A) + P(B) - P(A \cap B)$; $P(A \cup B) \le P(A) + P(B)$

$P(A|B) = P(A \cap B) / P(B)$, $\quad P(B) > 0$

$P(A \cap B) = P(A)\, P(B|A)$, $\;P(A) \neq 0$ $\quad$ edo $\quad P(A \cap B) = P(B)\, P(A|B)$, $\quad P(B) \neq 0$

$P(A_1 \cap A_2 \cap \dots \cap A_n) = P(A_1) P(A_2 / A_1) \dots P(A_n / A_1 \cap \dots \cap A_{n-1})$

A eta B bateraezinak $\Leftrightarrow P(A \cap B) = 0$ $\qquad$ *A eta B independenteak* $\Leftrightarrow P(A \cap B) = P(A)P(B)$.

$P(B) = P(B|A_1)\, P(A_1) + P(B|A_2)\, P(A_2) + \dots + P(B|A_n)\, P(A_n)$, $\quad \{A_1, A_2, \dots, A_n\}$ gertaera-sistema osoa, $P(A_i) > 0$

$P(A_r|B) = \dfrac{P(B|A_r) P(A_r)}{P(B|A_1) P(A_1) + \dots + P(B|A_n) P(A_n)}$, $\quad r = 1, 2, \dots, n$, $\quad$ “ “ “ “ “

X* a.a. diskretuaren** $P(X = x_i) = f(x_i) = p_i$ ***probabilitate-funtzioa baldin (i) $f(x_i) \ge 0$, $\quad i = 1, \dots, n$ *eta (ii)* $\sum_{i=1}^{n} f(x_i) = 1$, $F(x)$ ***banaketa-funtzioa*** $F(x) = P(X \le x) = \sum_{x_i \le x} f(x_i)$. Propietatea: $f(x_i) = F(x_i) - F(x_{i-1})$, $\quad i = 1,2,\dots,n$; $\mu = E(x) = \sum_{i=1}^{n} x_i f(x_i)$;

$E(k_1X_1 + k_2X_2 + \dots + k_nX_n) = k_1E(X_1) + k_2E(X_2) + \dots + k_nE(X_n)$; $\sigma_x^2 = Var(X) = \sum_{i=1}^{n} x_i^2 p_i - \mu^2$; $Var(kX) = k^2 Var(X)$, **Tchebychev**

$P(|X - \mu| \le k\sigma) \ge 1 - \dfrac{1}{k^2}$, $\forall k > 0$; ***Teorema:*** *Bin(n,p)* $\cong$ *Pois(np)*, $p \le 0{,}1$, $np < 5$. ***Teorema:*** *H(N,n,p)* $\cong$ *Bin(n,p)*, $n/N < 0{,}1$

X: Bin(n,p), $\quad P(X = x) = \binom{n}{x} p^x (1-p)^{n-x}$, $\quad F(x) = P(X \le x) = \sum_{k \le x} \binom{n}{k} p^k (1-p)^{n-k}$., $E(X) = np$, $Var(X) = npq$

X: Pois(λ), $\quad P(X = x) = \dfrac{e^{-\lambda} \lambda^x}{x!}$, $\quad F(x) = P(X \le x) = \sum_{k \le x} (e^{-\lambda} \lambda^k) / k!$, $\quad E(X) = \lambda$, $\quad Var(X) = \lambda$

X:H(N, n, r/N), $\quad P(X = x) = \binom{r}{x}\binom{N-r}{n-x} / \binom{N}{n}$, $\quad E(X) = np$, $\quad Var(X) = npq(N-n)/(N-1)$.

X* a.a.jarraituaren** *F(x)* ***banaketa-funtzioak $F(x) = P(X \le x)$; $f(x)$ funtzioa dentsitate-funtzioa baldin (i) $f(x) \ge 0$, $\forall x \in \mathbb{R}$ eta (ii) $\int_{-\infty}^{+\infty} f(x)dx = 1$; $P(x_1 \le X \le x_2) = F(x_2) - F(x_1)$; $F(x) = \int_{-\infty}^{x} f(t)dt$; $E(X) = \int_{-\infty}^{+\infty} x f(x)dx$; $Var(X) = \int_{-\infty}^{+\infty} x^2 f(x)dx - \mu^2$

Teorema: *Bin(n,p)* $\cong N(np, \sqrt{npq})$, $np>5$ *eta* $nq>5$. ***Teorema***: *Pois*(λ) $\cong N(\lambda, \sqrt{\lambda})$, $\lambda > 18$; **Tchebychev** (berdin)

X:Unif(a,b), . $f(x) = \begin{cases} \dfrac{1}{b-a}, & a \le x \le b \\ 0, & \text{beste} \end{cases}$, $F(x) = \begin{cases} 0, & x < a \\ \dfrac{x-a}{b-a}, & a \le x < b \\ 1, & x \ge b \end{cases}$, $E(X) = \dfrac{a+b}{2}$, $Var(X) = (b-a)^2/12$

X: exp(β) $f(x) = \begin{cases} \dfrac{1}{\beta} e^{-\frac{x}{\beta}}, & x > 0 \\ 0, & x \le 0 \end{cases}$, $F(x) = \begin{cases} 1 - e^{-\frac{x}{\beta}}, & x > 0 \\ 0, & x \le 0 \end{cases}$, $E(X) = \beta$, $Var(X) = \beta^2$

Teorema. Biz X: N(μ, σ), σ ezagunekoa. Orduan, $\bar{X}$ aldagaiak $N(\mu, \sigma/\sqrt{n})$ banaketa du.