Aputuloksia

Kaavat ovat suuntaa antavia. Korvaa esimerkiksi populaatiosuureet otossuureilla tai normaalijakauman persentiili t-jakauman persentiilillä tarpeen mukaan.

- $\mathsf{P}(A \text{ tai } B) = \mathsf{P}(A) + P(B) - \mathsf{P}(A \text{ ja } B)$, $\mathsf{P}(A \text{ ja } B) = \mathsf{P}(A\,|B)P(B)$, $\mathsf{P}(A^C) = 1 - \mathsf{P}(A)$.
- Riippumattomuuden pätiessä $\mathsf{P}(A\,|B) = \mathsf{P}(A\,)$ ja $\mathsf{P}(A \text{ ja } B) = \mathsf{P}(A)\mathsf{P}(B)$.
- $\mathsf{P}(A) = \sum_{i=1}^{n} \mathsf{P}(A\,|B_i)P(B_i)$.
- $\mathsf{P}(B_i|A) = \dfrac{\mathsf{P}(A|B_i)P(B_i)}{\sum_{i=1}^{n} \mathsf{P}(A|B_i)P(B_i)}$.
- $\dbinom{n}{k} = \dfrac{n!}{k!(n-k)!}, \quad \dbinom{n}{0} = \dbinom{n}{n} = 1.$
- $\dfrac{K}{N} = \dfrac{k}{n}$.
- $\mathsf{P}(X = k) = \dfrac{\binom{K}{k}\binom{N-K}{n-k}}{\binom{N}{n}}$, $\mathsf{E}(X) = np$, $\mathsf{D}^2(X) = npq\dfrac{N-n}{N-1}$, $p = \dfrac{K}{N}$.
- $\mathsf{P}(X = k) = \dbinom{n}{k}p^k q^{n-k}, \quad \mathsf{E}(X) = np, \quad \mathsf{D}^2(X) = npq.$
- Jos X_i:t ovat riippumattomia ja $X_i \sim\mathsf{N}(\mu, \sigma^2)$, $i = 1, \ldots, n$, niin $n^{-1}\sum_{i=1}^{n} X_i \sim\mathsf{N}(\mu, \sigma^2/n)$.
- $z = \dfrac{\bar{X} - \mu}{\sigma/\sqrt{n}}$
- $z = \dfrac{\bar{X}_1 - \bar{X}_2}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$
- $t = \dfrac{\bar{X}_1 - \bar{X}_2}{s\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}, \quad s^2 = \dfrac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}.$
- $t = \dfrac{\bar{D}}{s_D/\sqrt{n}}$

- $z = \dfrac{\hat{p} - p_0}{\sqrt{\dfrac{p_0 q_0}{n}}}$
- $\bar{X} \pm z_{\alpha/2} s/\sqrt{n}$
- $\hat{p} \pm z_{\alpha/2}\sqrt{\hat{p}\hat{q}/n}$
- $n = \left(\dfrac{\sigma z_{\alpha/2}}{a}\right)^2$
- $n = \left(\dfrac{\sqrt{pq}\, z_{\alpha/2}}{a}\right)^2$
- $z = \dfrac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})(\dfrac{1}{n_1} + \dfrac{1}{n_2})}}, \quad \hat{p} = \dfrac{n_1\hat{p}_1 + n_2\hat{p}_2}{n_1 + n_2}$
- $\dfrac{(n-1)s^2}{\sigma^2} \sim \chi^2_{n-1}$
- $F = \dfrac{s_1^2}{s_2^2} \sim F_{n_1-1, n_2-1}$
- $X^2 = \sum_{i=1}^{k} \dfrac{(O_i - E_i)^2}{E_i} \sim \chi^2_{k-1-m}$, jossa m on estimoitujen parametrien lukumäärä.
- $X^2 = \sum_{i=1}^{r}\sum_{j=1}^{c} \dfrac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2_{(r-1)(c-1)}$
- r= $\dfrac{\sum_{i=1}^{n}(Y_i - \bar{Y})(X_i - \bar{X})}{\sqrt{\sum_{i=1}^{n}(Y_i - \bar{Y})^2}\sqrt{\sum_{i=1}^{n}(X_i - \bar{X})^2}}$
- $\rho = 1 - \dfrac{6\sum_{i=1}^{n} d_i^2}{n^3 - n}$
- $F_{p,n-p-1} = \dfrac{\mathsf{SSM}/p}{\mathsf{SSE}/(n-p-1)} = \dfrac{\mathsf{R}^2/p}{(1-\mathsf{R}^2)/(n-p-1)}$
- t_{n-p-1}.

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Vaihtelun lähde	Neliö-summa	Vapaus-asteet	Varianssi estimaattori	F-testisuure
Ryhmien välinen	SSG	$k-1$	$\dfrac{\mathsf{SSG}}{k-1}$	$\dfrac{\mathsf{SSG}/(k-1)}{\mathsf{SSE}/(n-k)}$
Ryhmien sisäinen	SSE	$n-k$	$\dfrac{\mathsf{SSE}}{n-k}$	
Kokonais-vaihtelu	SST	$n-1$	$\dfrac{\mathsf{SST}}{n-1}$	

- Jakaumataulukot.