TKMY2 Kuvaileva tilastotiede

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(1) $\bar{x} = \frac{x_1 + x_2 + \ldots + x_n}{n} = \frac{\sum_{i=1}^{n} x_i}{n}$

(2) $\bar{x} = \frac{f_1 x_1 + f_2 x_2 + \ldots + f_r x_r}{f_1 + f_2 + \ldots + f_r} = \frac{\sum_{i=1}^{r} f_i x_i}{n}$

(3) $W = (x_{\min}, x_{\max})$

(4) $R = x_{\max} - x_{\min}$

(5) $Q = (Q_1, Q_3)$

(6) $QR = Q_3 - Q_1$

(7) $\sigma^2 = \frac{\sum_{i=1}^{n} (x_i - \mu)^2}{N}$

(8) $\sigma = \sqrt{\sigma^2} = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \mu)^2}{N}}$

(9) $s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}$

(10) $s = \sqrt{s^2} = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}$

(11) $s^2 = \frac{\sum_{i=1}^{n} x_i^2 - \frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}}{n-1}$

(12) $\sigma_Y^2 = a^2 \sigma_{X1}^2 + (1-a)^2 \sigma_{X2}^2 + 2a(1-a)\sigma_{X1}\sigma_{X2}\rho_{X1X2}$

(13) $a^* = \frac{\sigma_{X2}^2 - \sigma_{X1}\sigma_{X2}\rho_{X1X2}}{\sigma_{X1}^2 + \sigma_{X2}^2 - 2\sigma_{X1}\sigma_{X2}\rho_{X1X2}}$

(14) $z_i = \frac{x_i - \bar{x}}{s}$

(15) $z_i = \frac{x_i - Q_3}{QR}$

(16) $z_i = \frac{x_i - Q_1}{QR}$

(17) $V\% = 100 \cdot \frac{s}{\bar{x}}\%$

(18) $\frac{\bar{x} - Mo}{s}$

(19) $\frac{3(\bar{x} - Md)}{s}$

(20) $g_1 = \frac{m_3}{s^3}$

(21) $m_3 = \frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^3$

(22) $g_2 = \frac{m_4}{s^4} - 3$

(23) $$m_4 = \frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^4$$

(24) $$e_{ij} = \frac{f_{i.} f_{.j}}{n}$$

(25) $$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{s}\frac{(f_{ij} - e_{ij})^2}{e_{ij}}$$

(26) $$C = \sqrt{\frac{\chi^2}{\chi^2 + n}}$$

(27) $$C_{\max} = \sqrt{\frac{q-1}{q}}$$

(28) $$q = \min(r, s)$$

(29) $$r_{XY} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})\cdot(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \cdot \sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

(30) $$r_{XY} = \frac{n\sum_{i=1}^{n}x_i y_i - \left(\sum_{i=1}^{n}x_i\right)\left(\sum_{i=1}^{n}y_i\right)}{\sqrt{\left[n\sum_{i=1}^{n}x_i^2 - \left(\sum_{i=1}^{n}x_i\right)^2\right]\left[n\sum_{i=1}^{n}y_i^2 - \left(\sum_{i=1}^{n}y_i\right)^2\right]}}$$

(31) $$r_s = 1 - \frac{6\cdot\sum_{i=1}^{n}d_i^2}{n(n^2-1)},$$

(32) $$r_{XY.Z} = \frac{r_{XY} - r_{XZ}r_{YZ}}{\sqrt{(1 - r_{XZ}^2)(1 - r_{YZ}^2)}}$$

(33) $$b_1 = \frac{n\sum_{i=1}^{n}x_i y_i - \left(\sum_{i=1}^{n}y_i\right)\left(\sum_{i=1}^{n}x_i\right)}{n\sum_{i=1}^{n}x_i^2 - \left(\sum_{i=1}^{n}x_i\right)^2}$$

(34) $$b_0 = \frac{1}{n}\left(\sum_{i=1}^{n}y_i - b_1\sum_{i=1}^{n}x_i\right) = \bar{y} - b_1\bar{x}$$

(35) $$R^2 = r_{XY}^2 = \frac{\sum_{i=1}^{n}(y_i - \bar{y})^2 - \sum_{i=1}^{n}(y_i - \hat{y}_i)^2}{\sum_{i=1}^{n}(y_i - \bar{y})^2}$$
$$= \frac{SST - SSE}{SST} = \left(\frac{s_X}{s_Y}b_1\right)^2$$

(36) $$OR = \frac{f_{11}/f_{21}}{f_{12}/f_{22}}$$

(37) $$b_0 = \ln(f_{12}/f_{22})$$

(38) $$b_1 = \ln\left(\frac{f_{11}/f_{21}}{f_{12}/f_{22}}\right) = \ln(OR)$$

(39) $$OR = e^{b_1}$$

(40) $$p = \frac{1}{1 + e^{-(b_0 + b_1 x)}}$$