KORELASI & REGRESI

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REGRESI LINIER

$$y = a_0 + a_1 x$$

$$\sum Y = a_0 N + a_1 \sum X$$

$$\sum XY = a_0 \sum X + a_1 \sum X^2$$

Dapat dibuktikan

$$a_0 = \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{N(\sum X^2) - (\sum X)^2}$$

$$a_1 = \frac{N(\sum XY) - (\sum X)(\sum Y)}{N(\sum X^2) - (\sum X)^2}$$

Atau

$$y = \left(\frac{\sum xy}{\sum x^2}\right) x \qquad x = \left(\frac{\sum xy}{\sum y^2}\right) y$$

$$x = X - \bar{X} \qquad y = Y - \bar{Y}$$

Standar eror

$$s_{Y.X} = \sqrt{\frac{\sum(Y - Y_{tes})^2}{N}} \qquad s_{X.Y} = \sqrt{\frac{\sum(X - X_{tes})^2}{N}}$$

Umumnya, $s_{Y.X} \neq s_{X.Y}$

Buktikan $$s_{Y.X}^2 = \frac{\sum Y^2 - a_0 \sum Y - a_1 \sum XY}{N}$$

Koefisien Korelasi

$$r = \pm\sqrt{\frac{\sum(Y_{tes} - \bar{Y})^2}{\sum(Y - \bar{Y})^2}}$$

Buktikan

$$r = \frac{N\sum XY - (\sum X)(Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (Y)^2]}}$$

TEORI SAMPLING DARI KORELASI

Variabel (X,Y) adalah sampel dari Populasi Bivariat

Asumsi : *distribusi normal bivariat*

1. Ho : ρ =0

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

Derajat kebebasan $N - 2$

Tolak Ho jika $t_{hit} > t_{tabel}$

2. Ho : ρ = ρo ≠ 0

$$Z = \frac{1}{2} ln\left(\frac{1+r}{1-r}\right) = 1{,}1513 \log\left(\frac{1+r}{1-r}\right)$$

$$\mu_z = 0.5 \ln\left(\frac{1+\rho_0}{1-\rho_0}\right) = 1.1513 \log\left(\frac{1+\rho_0}{1-\rho_0}\right)$$

$$\sigma_z = \frac{1}{\sqrt{N-3}}$$

$$z = \frac{Z - \mu_z}{\sigma_z}$$

Tolak Ho jika $Z_{hit} > Z_{tabel}$