

A21

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Test the null hypothesis $H_0: \rho=0,8$ against the alternative hypothesis $H_1: \rho>0,8$ (one-tailed!) with an error of $\alpha=5\%$ for $n=14$ and $r_{xy}=0,96$

a) with $t_{calc} = (r - \rho_0) \cdot \sqrt{\frac{n-2}{(1-r^2) \cdot (1-\rho_0^2)}}$ and $df = n-2$ (table of Students t-distribution)

b) with Fishers z-transform and $z_{calc} = (z - z_0) \cdot \sqrt{n-3}$ (standard normal distribution)

$$a_1 \quad t_{calc} = (0.96 - 0.8) \cdot \sqrt{\frac{12}{(1-0.96^2)(1-0.8^2)}}$$

$$t_{calc} = 3.2991$$

$$t_{krit} = 1.792 \quad < \quad t_{calc}$$

\Rightarrow reject H_0

$$b_1 \quad z = \frac{1}{2} \cdot \ln\left(\frac{1+0.96}{1-0.96}\right) = 1.9459$$

$$z_0 = \frac{1}{2} \cdot \ln\left(\frac{1+0.8}{1-0.8}\right) = 1.0996$$

$$z_{calc} = (1.9459 - 1.0996) \cdot \sqrt{11} = 2.8102$$

$$z_{krit} = 1.645 < z_{calc}$$

\Rightarrow reject H_0