

A23

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ad assignment A21: Which sample size n is necessary in order to reject the null hypothesis $H_0: \rho=0,8$ in favor of the alternative hypothesis $H_1: \rho>0,8$, when a sample correlation coefficient $r_{xy}=0,96$ is observed?

Answer the question

- a) for t_{calc} b) for z_{calc} (after Fishers z-transform)

A21

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

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

from Wolfram Alpha:

$$n = \frac{1}{400} \cdot (4411^2 + 800) \quad n = \frac{100000000 + 2153756}{712122}$$

a)				b)			
r	0.96	r0	0.8	z	1.94591	z	1.09861
df + 2	t	n	real n	z	n	real n	
3	6.314	45.9529		1.64	6.74639	7	
4	2.92	11.4004					
5	2.353	8.10411					
6	2.132	7.01133					
7	2.015	6.4764	7				
8	1.943	6.16221					
9	1.895	5.95911					