A18

Monday, 18. November 2019 13:31

A18

For three correlation coefficients r_1, r_2, and r_3, which were calculated from equal size samples, determine the average correlation coefficient
- in rough approximation with a simple arithmetic mean of the r_i
- more accurate by means of the arithmetic mean of the z-transformed values, and subsequent inverse transformation.

For this task first use the numerical values (0.3, 0.8, 0.91) and then the values (0.91, 0.95, 0.99) for the correlation coefficients (r_1; r_2; r_3).

Variant:

same specification, but now the three correlation coefficients come from different size samples with sample sizes n_1=8, n_2=12 und n_3=15. Note: weights are degrees of freedom $df_i=n_i-2$!

1.1 $\frac{0.3 + 0.8 + 0.91}{3} = 0.67$

1.2 $\frac{0.91 + 0.95 + 0.99}{3} = 0.95$

z TRANSFORM

$z = \frac{1}{2} \cdot \ln\left(\frac{1+r}{1-r}\right)$

$r = \frac{e^{2z} - 1}{e^{2z} + 2}$

weighted: $\frac{\sum w_i \cdot z(r_i)}{\sum w_i}$

1.1 1.2 1.3

	r	z	weighted
	0.3	0.30952	6
	0.8	1.09861	10
	0.91	1.52752	13
mean	0.67	0.97855	1.12762
endresult	0.67	0.75244	0.8102

2.1 2.2 2.3

	r	z	
	0.91	1.52752	6
	0.95	1.83178	10
	0.99	2.64665	13
mean	0.95	2.00199	2.13412
endresult	0.95	0.96417	0.97237