Spearman's Rank Correlation Critical Values Table

Two-Tailed Tests | α = 0.05 & α = 0.01 | Sample Size n = 5 – 50

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DECISION RULE Reject H_0 (significant) if $|r_s| \geq r_{critical}$ | Fail to reject H_0 if $|r_s| < r_{critical}$

Critical Values Table — Two-Tailed Tests

Look up your sample size n in the left column. The critical value r_s at your chosen significance level α is shown in the corresponding column. Use the absolute value $|r_s|$ of your calculated coefficient for comparison.

Sample Size (n)	α = 0.05 Two-Tailed	α = 0.01 Two-Tailed
n = 5	1.000	—
n = 6	0.886	1.000
n = 7	0.786	0.929
n = 8	0.738	0.881
n = 9	0.700	0.833
n = 10	0.648	0.794
n = 11	0.618	0.755
n = 12	0.587	0.727
n = 13	0.560	0.703
n = 14	0.538	0.679
n = 15	0.521	0.654
n = 16	0.503	0.635
n = 17	0.485	0.615
n = 18	0.472	0.600
n = 19	0.460	0.584
n = 20	0.447	0.570
n = 21	0.435	0.556
n = 22	0.425	0.544
n = 23	0.415	0.532
n = 24	0.406	0.521
n = 25	0.398	0.511
n = 26	0.390	0.501
n = 27	0.382	0.491

Sample Size (n)	α = 0.05 Two-Tailed	α = 0.01 Two-Tailed
n = 28	0.375	0.483
n = 29	0.368	0.475
n = 30	0.362	0.467
n = 35	0.335	0.433
n = 40	0.313	0.405
n = 45	0.294	0.382
n = 50	0.279	0.363

■ *— indicates that statistical significance is not achievable at this α level for the given n. For n = 5 at α = 0.01 (two-tailed), no permutation of 5 ranks produces a value in the rejection region.*

■ *Values for $n \leq 30$ are exact permutation-based critical values. Values for n = 35–50 are close approximations derived from the t-distribution conversion: $t = r_s \times \sqrt{[(n-2)/(1-r_s^2)]}$, df = n–2.*

■ *For n > 50, convert r_s to a t-statistic (formula above) and consult the t-distribution table at df = n–2.*

■ *Tied ranks require the Pearson formula applied to midpoint ranks. For heavy ties, exact permutation software is recommended.*

Key Formulas

STANDARD FORMULA (no ties)

$r_s = 1 - (6 \times \Sigma d^2) / [n(n^2 - 1)]$

d = Rank(X_i) – Rank(Y_i) for each observation pair; n = total number of pairs

TIED RANKS VARIANT

$r_s = \Sigma(x_i - x\blacksquare)(y_i - y\blacksquare) / \sqrt{[\Sigma(x - x\blacksquare)^2 \times \Sigma(y - y\blacksquare)^2]}$

Assign midpoint average ranks to tied values, then apply Pearson formula to ranks

References & Sources

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