

Mann-Whitney U Critical Values — Two-Tailed $\alpha = 0.01$ | One-Tailed $\alpha = 0.005$

Strict significance level for clinical, medical, and high-stakes research. Use this table when a stronger standard of evidence is required before rejecting H_0 . Note: more cells display a dash (—) at this strict level — small samples cannot produce a U statistic extreme enough to reach $\alpha = 0.01$ significance. For $n > 20$, use the z-approximation with $z_{critical} = \pm 2.576$.

Decision: $U \leq U_{critical} \rightarrow$ Reject H_0

$$U_1 = n_1 n_2 + n_1(n_1 + 1)/2 - R_1 \quad | \quad U_2 = n_1 n_2 + n_2(n_2 + 1)/2 - R_2 \quad | \quad U = \min(U_1, U_2) \quad | \quad \text{Verify: } U_1 + U_2 = n_1 \times n_2$$

$n_1 \setminus n_2$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	0	0	1	1	2	2	2	3	3	4	4	5	5
4	—	—	—	—	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
5	—	—	—	0	1	2	3	4	5	7	8	9	10	11	13	14	15	16	17	18
6	—	—	—	1	2	3	5	6	8	10	11	13	14	16	18	19	21	22	24	26
7	—	—	—	1	3	5	7	9	11	13	15	17	20	22	24	26	28	30	32	35
8	—	—	0	2	4	6	9	11	14	16	19	22	24	27	30	32	35	38	40	43
9	—	—	0	3	5	8	11	14	17	20	23	26	29	32	35	38	42	45	48	51
10	—	—	1	4	7	10	13	16	20	23	27	30	34	37	41	45	48	52	56	59
11	—	—	1	5	8	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67
12	—	—	2	6	9	13	17	22	26	30	35	39	44	48	53	57	62	67	71	76
13	—	—	2	7	10	14	20	24	29	34	39	44	49	54	59	64	69	74	79	84
14	—	—	2	7	11	16	22	27	32	37	43	48	54	59	65	70	76	82	87	93
15	—	—	3	8	13	18	24	30	35	41	47	53	59	65	70	76	82	89	95	101
16	—	—	3	9	14	19	26	32	38	45	51	57	64	70	76	83	89	96	102	109
17	—	—	4	10	15	21	28	35	42	48	55	62	69	76	82	89	96	103	110	118
18	—	—	4	11	16	22	30	38	45	52	59	67	74	82	89	96	103	111	118	126
19	—	—	5	12	17	24	32	40	48	56	63	71	79	87	95	102	110	118	126	134
20	—	—	5	13	18	26	35	43	51	59	67	76	84	93	101	109	118	126	134	143

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