Wilcoxon Signed-Rank Test Table — One-Tailed Critical Values of W

n = 5 to 50 · Alpha Levels: α = 0.05, 0.025, 0.01, 0.005 · Reject H■ if W ≤ W_critical

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■ Use one-tailed values ONLY when:

(1) Your directional hypothesis was formally pre-registered before data collection, AND (2) you are testing whether the intervention produces a change in a specific direction only (e.g., "therapy will *reduce* anxiety scores" — not just change them).

Never select one-tailed testing after observing results to achieve significance. This inflates the Type I error rate and constitutes p-hacking (APA, 2020; Simmons et al., 2011).

Numerical identity note: The values in this table are *identical* to those in the two-tailed table — only the column label interpretation changes. One-tailed α = 0.025 produces the same $W_{critical}$ as two-tailed α = 0.05.

One-tailed H_1 options:
Upper-tailed: median difference > 0 (condition X > condition Y)
Lower-tailed: median difference < 0 (condition X < condition Y)

Complete One-Tailed Critical Values of W (n = 5 to 50)

n (effective)	One-Tailed α = 0.05 (Two-Tailed α = 0.10)	One-Tailed α = 0.025 ★ (Two-Tailed α = 0.05)	One-Tailed (Two-Tailed	n (effective)	One-Tailed α = 0.05 (Two-Tailed α = 0.10)	One-Tailed α = 0.025 ★ (Two-Tailed α = 0.05)	One-Tailed α = 0.01 (Two-Tailed α = 0.02
5	0	—	—	28	130	116	101
6	2	0	—	29	140	126	110
7	3	2	0	30	151	137	120
8	5	3	1	31	163	147	130
9	8	5	3	32	175	159	140
10	10	8	5	33	187	170	151
11	13	10	7	34	200	182	162
12	17	13	9	35	213	195	173
13	21	17	12	36	227	208	185
14	25	21	15	37	241	221	198
15	30	25	19	38	256	235	211
16	35	29	23	39	271	249	224
17	41	34	27	40	286	264	238
18	47	40	32	41	302	279	252
19	53	46	37	42	319	294	266
20	60	52	43	43	336	310	281
21	67	58	49	44	353	327	296
22	75	65	55	45	371	343	312
23	83	73	62	46	389	361	328
24	91	81	69	47	407	378	345
25	100	89	76	48	426	396	362
26	110	98	84	49	446	415	379
27	119	107	91	50	466	434	397

★ One-tailed α = 0.025 is equivalent to two-tailed α = 0.05. Milestone rows at n = 10, 20, 30, 40, 50 are marked for fast lookup.

Feature	One-Tailed Test	Two-Tailed Test (default)
H■ states...	Median difference > 0 OR < 0 (specific direction)	Median difference ≠ 0 (any direction)
Power	Higher in the predicted direction	Balanced across both directions
Risk	Misses effects in opposite direction	More conservative but safer
When to use	Direction pre-specified before data collection	Default for most research
α = 0.025 → same as two-tailed α = 0.05	Same W_critical value	Same W_critical value

Sources: Wilcoxon (1945) *Biometrics Bulletin 1*(6) doi:10.2307/3001968 · Conover (1999) *Practical Nonparametric Statistics* 3rd ed. · NIST/SEMATECH itl.nist.gov · Penn State STAT 415 online.stat.psu.edu · Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology. *Psychological Science, 22*(11), 1359–1366.