Example:

Suppose we’re interested in whether doing practice problems improves performance in statistics. We have 8 students take a quiz before and after practice.

 H0: Practice does not improve performance.

 H1: Practice improves performance.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Subj | Before Practice | After Practice | D | Rank | Signed Rank | Negative Ranks | Positive Ranks |
| 1 | 12 | 16 | -4 | 5 | -5 | 5 |  |
| 2 | 11 | 18 | -7 | 8 | -8 | 8 |  |
| 3 | 13 | 19 | -6 | 7 | -7 | 7 |  |
| 4 | 17 | 16 | 1 | 1 | 1 |  | 1 |
| 5 | 18 | 15 | 3 | 3.5 | 3.5 |  | 3.5 |
| 6 | 11 | 14 | -3 | 3.5 | -3.5 | 3.5 |  |
| 7 | 13 | 15 | -2 | 2 | -2 | 2 |  |
| 8 | 14 | 19 | -5 | 6 | -6 | 6 |  |

 N=8 ∑=31.5 ∑=4.5

We have a directional hypothesis: we expect people to do better after practice. Because of the way we set up the difference scores, this means we expect more negative differences than positive differences.

This means the sum of negative ranks should be larger than the sum of positive ranks, so:

Tobt = the sum of positive ranks = 4.5

For α = 0.05, 1-tail, with N = 8, Tcrit = 5 (obtained for a chart)

 Tobt < Tcrit → reject H0  Practice affects performance.