

Solutions

For each of the following pairs of hypotheses and data sets, calculate the test statistic for the sign test

	A	B	C	D	E	F	G	H	I
Rank	8	6	7	10	9	16	12	2	13.5
1	32	29	31	34	33	39	36	25	37
2	37	28	35	38	24	27	26		
Rank	13.5	5	11	15	1	4	3		

$H_0: \eta_1 = \eta_2$ $H_a: \eta_1 \neq \eta_2$ $T^1: 83.5$ $T^2: 52.5$ $U^1: 38.5$ $U^2: 24.5$ Test Statistic: 24.5

Subject	A	B	C	D	E	F	G	H	I	J	K	L
Rank	7	13	17	9.5	1	6	17	19				
before	119	128	135	124	102	118	135	136				
after	124	135	126	111	112	138	127	105	114	132	121	133
Rank	9.5	17	11	3	4	20	12	2	5	14	8	15

$H_0: \eta_{\text{before}} = \eta_{\text{after}}$ $H_a: \eta_{\text{before}} > \eta_{\text{after}}$ $T^b: 89.5$ $T^a: 120.5$ $U^b: 53.5$ $U^a: 42.5$ Test Statistic: 42.5

Group	A	B	C	D	E	F	G	H	I
Rank	8	9	6.5	6.5	15.5	5	11	1	13
Test 1	13.6	13.9	13.5	13.5	14.6	13.4	14.2	13.1	14.4
Test 2	14.3	13.2	14.6	14.8	14.1	13.3	13.2	14.8	14.5
Rank	12	2.5	15.5	17.5	10	4	2.5	17.5	14

$H_0: \eta_{\text{Test1}} = \eta_{\text{Test2}}$ $H_a: \eta_{\text{Test1}} < \eta_{\text{Test2}}$ $T^1: 75.5$ $T^2: 95.5$ $U^1: 30.5$ $U^2: 50.5$ Test Statistic: 30.5

Team	A	B	C	D	E	F
Rank	8.5	6.5	1.5	5	10.5	
Weekday	884	879	837	874	887	
Weekend	864	837	887	879	847	884
Rank	4	1.5	10.5	6.5	3	8.5

$H_0: \eta_{\text{weekday}} = \eta_{\text{weekend}}$ $H_a: \eta_{\text{weekday}} \neq \eta_{\text{weekend}}$ $T_{\text{day}}: 32$ $T_{\text{end}}: 34$ $U_{\text{day}}: 17$ $U_{\text{end}}: 13$ Test Statistic: 13