

Solutions

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

Pair	A	B	C	D	E	F	G	H	I
1	62	79	67	64	65	69	62	75	64
2	67	78	65	67	75	77	69	64	78
d	-5	+1	+2	-3	-10	-8	-7	+9	-12
Rank	4	1	2	3	8	6	5	7	9

$H_0: \eta_d = 0$

$H_0: \eta_d \neq 0$

$T^+ : 10$

$T^- : 35$

Test Statistic: 10

Subject	A	B	C	D	E	F	G	H	I	J	K	L
before	119	128	115	114	102	118	115	116	129	116	119	119
after	114	115	116	111	112	118	117	105	114	112	111	113
d	+5	+13	-1	+3	-10	0	-2	+11	+15	+4	+8	+7
Rank	5	10	1	3	8	X	2	9	11	4	7	6

$H_0: \eta_d = 0$

$H_0: \eta_d > 0$ (Before - After)

$T^+ : 55$

$T^- : 11$ Test Statistic: 11

Group	A	B	C	D	E	F	G	H	I
Test 1	0.6	0.9	0.5	0.5	0.6	0.6	0.0	0.0	0.4
Test 2	0.0	0.2	0.0	0.8	0.1	0.0	0.2	0.8	0.4
d	-0.6	-0.7	-0.5	+0.3	-0.4	-0.6	+0.2	+0.8	0
Rank	5.5	7	4	2	3	5.5	1	8	X

$H_0: \eta_d = 0$

$H_0: \eta_d < 0$ (Test 2 - Test 1)

$T^+ : 11$

$T^- : 25$ Test Statistic: 11

Team	A	B	C	D	E	F
Weekday	224	279	237	274	287	262
Weekend	264	237	226	279	247	284
d	-40	+42	+11	-5	+40	-22
Rank	4.5	6	2	1	4.5	3

$H_0: \eta_d = 0$

$H_0: \eta_d \neq 0$

$T^+ : 12.5$

$T^- : 8.5$

Test Statistic: 8.5