

Scen

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SYMMETRIC FUNCTION AND ALLIED TABLES

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Table 5.8. Distribution of $C_{n,S}$ required for Kendall's τ and Mann's T ;

$$n = 1(1)16, S = 0(1) [\frac{1}{2}n(n-1)]$$

The quantities tabulated are the coefficients of x^S in the expansion of

$$\prod_{j=1}^n \left(\frac{1-x^j}{1-x} \right) = \sum_{S=1}^M C_{n,S} x^S,$$

where $M = \frac{1}{2}n(n-1)$. The p.d.f. of S is

$$p(S) = C_{n,S}/n!, \quad 0 \leq S \leq \frac{1}{2}n(n-1).$$

Each column in the table is symmetrical about the central value or values (shown in bold type).

Kendall's τ is

$$\tau = -1 + 4S/\{n(n-1)\}.$$

Mann's T is just S .

The sum of the frequencies of S for given n is $n!$.

$S \backslash n$	1	2	3	4	5	6	7	8	9	10	11
0	1										
1		1									1
2			2								10
3				5							54
4					9						209
5						14					649
6							20				1717
7								27			4015
8									35		8504
9										44	16599
10											30239
11											
12											
13											
14											
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Table 5·8 (cont.)

<i>S</i> \ <i>n</i>	12	13	14	15	16
0	I	I	I	I	I
1	11	12	13	14	15
2	65	77	90	104	119
3	274	351	441	545	664
4	923	1274	1715	2260	2924
5	2640	3914	5629	7889	10813
6	6655	10569	16198	24087	34900
7	15159	25728	41926	66013	100913
8	31758	57486	99412	165425	266338
9	61997	119483	218895	384320	650658
10	113906	233389	452284	836604	1487262
11	198497	431886	884170	1720774	3208036
12	330121	762007	1646177	3366951	6574987
13	526581	1288587	2934764	6301715	12876702
14	808896	2097472	5032235	11333950	24210652
15	1200626	3298033	8330256	19664205	43874857
16	1726701	5024460	13354639	33018831	76893687
17	2411747	7435284	20789572	53808313	130701986
18	3277965	10710609	31498907	85306779	216008661
19	4342688	15046642	46541635	131846699	347854815
20	5615807	20647290	67178356	199019426	546871981
21	7097310	27712842	94865470	293868698	840732790
22	8775209	36426054	131234038	425060810	1265769513
23	10624132	46936280	178050835	603012233	1868715733
24	12604826	59342609	237160055	839953393	2708503701
25	14664752	73677240	310405409	1149906518	3858025899
26	16739858	89890517	399533919	1548556267	5405745562
27	18757500	107839121	506084453	2052994543	7457019331
28	20640359	127278852	631265833	2681325612	10134977992
29	22311069	147863220	775831020	3452124397	13580800674
30	23697232	169148705	939955265	4383749406	17953216130
31	24736324	190607064	1123127045	5493521812	23427073737
32	25380120	211644496	1324060932	6796793172	30190848078
33	25598186	231626875	1540641165	8305935430	38442975195
34	25380120	249909685	1769903560	10029297355	48386965771
35	...	265870800	2008061518	11970180517	60225299589
36		278943900	2250579364	14125894411	74152174574
37		288650143	2492293227	16486953600	90345259476
38		294625748	2727576366	19036479131	108956677797
39		296643390	2950542516	21749861592	130103527156
40		294625748	3155277747	24594733930	153858307693
41		...	3336088769	27531288780	180239689955
42			3487753817	30512958144	209204091832
43			3605761397	33487453708	240638550997
44			3686522377	36398145065	274355370450
45			3727542188	39185731988	310088978041
46			3727542188	41790147131	347495375766
47			3686522377	44152608576	386154462530
48			...	46217728808	425575398166
49				47935579065	465205041801
50				49263606316	504439350762
51				50168304699	542637474944
52				50626553988	579138134521
53				50626553988	613277734909
54				50168304699	644409560477
55				...	671923305201
56					695264150336
57					71395050364
58					727590240796
59					735852934219
60					758680521142