Statistical Tables

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Statistics

Table 1: χ^2-distribution

$$P(\chi^2 \geq \chi^2_\alpha) = 1 - F(\chi^2_\alpha) = \alpha$$

ϕ	0,999	0,995	0,990	0,980	0,975	0,950	0,900	0,750	0,600	0,500	0,400	0,250	0,100	0,050	0,025	0,010	0,005	0,001
1	0,000	0,000	0,000	0,001	0,001	0,004	0,016	0,102	0,275	0,455	0,708	1,323	2,706	3,841	5,024	6,635	7,879	10,827
2	0,002	0,010	0,020	0,040	0,051	0,103	0,211	0,575	1,022	1,386	1,833	2,773	4,605	5,991	7,378	9,210	10,597	13,815
3	0,024	0,072	0,115	0,185	0,216	0,352	0,584	1,213	1,869	2,366	2,946	4,108	6,251	7,815	9,348	11,345	12,838	16,266
4	0,091	0,207	0,297	0,429	0,484	0,711	1,064	1,923	2,753	3,357	4,045	5,385	7,779	9,488	11,143	13,277	14,860	18,466
5	0,210	0,412	0,554	0,752	0,831	1,145	1,610	2,675	3,656	4,351	5,132	6,626	9,236	11,070	12,832	15,086	16,750	20,515
6	0,381	0,676	0,872	1,134	1,237	1,635	2,204	3,455	4,570	5,348	6,211	7,841	10,645	12,592	14,449	16,812	18,548	22,457
7	0,599	0,989	1,239	1,564	1,690	2,167	2,833	4,255	5,493	6,346	7,283	9,037	12,017	14,067	16,013	18,475	20,278	24,321
8	0,857	1,344	1,647	2,032	2,180	2,733	3,490	5,071	6,423	7,344	8,351	10,219	13,362	15,507	17,535	20,090	21,955	26,124
9	1,152	1,735	2,088	2,532	2,700	3,325	4,168	5,899	7,357	8,343	9,414	11,389	14,684	16,919	19,023	21,666	23,589	27,877
10	1,479	2,156	2,558	3,059	3,247	3,940	4,865	6,737	8,295	9,342	10,473	12,549	15,987	18,307	20,483	23,209	25,188	29,588
11	1,834	2,603	3,053	3,609	3,816	4,575	5,578	7,584	9,237	10,341	11,530	13,701	17,275	19,675	21,920	24,725	26,757	31,264
12	2,214	3,074	3,571	4,178	4,404	5,226	6,304	8,438	10,182	11,340	12,584	14,845	18,549	21,026	23,337	26,217	28,300	32,909
13	2,617	3,565	4,107	4,765	5,009	5,892	7,041	9,299	11,129	12,340	13,636	15,984	19,812	22,362	24,736	27,688	29,819	34,527
14	3,041	4,075	4,660	5,368	5,629	6,571	7,790	10,165	12,078	13,339	14,685	17,117	21,064	23,685	26,119	29,141	31,319	36,124
15	3,483	4,601	5,229	5,985	6,262	7,261	8,547	11,037	13,030	14,339	15,733	18,245	22,307	24,996	27,488	30,578	32,801	37,698
16	3,942	5,142	5,812	6,614	6,908	7,962	9,312	11,912	13,983	15,338	16,780	19,369	23,542	26,296	28,845	32,000	34,267	39,252
17	4,416	5,697	6,408	7,255	7,564	8,672	10,085	12,792	14,937	16,338	17,824	20,489	24,769	27,587	30,191	33,409	35,718	40,791
18	4,905	6,265	7,015	7,906	8,231	9,390	10,865	13,675	15,893	17,338	18,868	21,605	25,989	28,869	31,526	34,805	37,156	42,312
19	5,407	6,844	7,633	8,567	8,907	10,117	11,651	14,562	16,850	18,338	19,910	22,718	27,204	30,144	32,852	36,191	38,582	43,819
20	5,921	7,434	8,260	9,237	9,591	10,851	12,443	15,452	17,809	19,337	20,951	23,828	28,412	31,410	34,170	37,566	39,997	45,314
21	6,447	8,034	8,897	9,915	10,283	11,591	13,240	16,344	18,768	20,337	21,992	24,935	29,615	32,671	35,479	38,932	41,401	46,796
22	6,983	8,643	9,542	10,600	10,982	12,338	14,041	17,240	19,729	21,337	23,031	26,039	30,813	33,924	36,781	40,289	42,796	48,268
23	7,529	9,260	10,196	11,293	11,689	13,091	14,848	18,137	20,690	22,337	24,069	27,141	32,007	35,172	38,076	41,638	44,181	49,728
24	8,085	9,886	10,856	11,992	12,401	13,848	15,659	19,037	21,652	23,337	25,106	28,241	33,196	36,415	39,364	42,980	45,558	51,179
25	8,649	10,520	11,524	12,697	13,120	14,611	16,473	19,939	22,616	24,337	26,143	29,339	34,382	37,652	40,646	44,314	46,928	52,619
26	9,222	11,160	12,198	13,409	13,844	15,379	17,292	20,843	23,579	25,336	27,179	30,435	35,563	38,885	41,923	45,642	48,290	54,051
27	9,803	11,808	12,878	14,125	14,573	16,151	18,114	21,749	24,544	26,336	28,214	31,528	36,741	40,113	43,195	46,963	49,645	55,475
28	10,391	12,461	13,565	14,847	15,308	16,928	18,939	22,657	25,509	27,336	29,249	32,620	37,916	41,337	44,461	48,278	50,994	56,892
29	10,986	13,121	14,256	15,574	16,047	17,708	19,768	23,567	26,475	28,336	30,283	33,711	39,087	42,557	45,722	49,588	52,335	58,301
30	11,588	13,787	14,953	16,306	16,791	18,493	20,599	24,478	27,442	29,336	31,316	34,800	40,256	43,773	46,979	50,892	53,672	59,702
31	12,196	14,458	15,655	17,042	17,539	19,281	21,434	25,390	28,409	30,336	32,349	35,887	41,422	44,985	48,232	52,191	55,002	61,098
32	12,810	15,134	16,362	17,783	18,291	20,072	22,271	26,304	29,376	31,336	33,381	36,973	42,585	46,194	49,480	53,486	56,328	62,487
33	13,431	15,815	17,073	18,527	19,047	20,867	23,110	27,219	30,344	32,336	34,413	38,058	43,745	47,400	50,725	54,775	57,648	63,869
34	14,057	16,501	17,789	19,275	19,806	21,664	23,952	28,136	31,313	33,336	35,444	39,141	44,903	48,602	51,966	56,061	58,964	65,247
35	14,688	17,192	18,509	20,027	20,569	22,465	24,797	29,054	32,282	34,336	36,475	40,223	46,059	49,802	53,203	57,342	60,275	66,619
36	15,324	17,887	19,233	20,783	21,336	23,269	25,643	29,973	33,252	35,336	37,505	41,304	47,212	50,998	54,437	58,619	61,581	67,985
37	15,965	18,586	19,960	21,542	22,106	24,075	26,492	30,893	34,222	36,336	38,535	42,383	48,363	52,192	55,668	59,893	62,883	69,348
38	16,611	19,289	20,691	22,304	22,878	24,884	27,343	31,815	35,192	37,335	39,564	43,462	49,513	53,384	56,895	61,162	64,181	70,704
39	17,261	19,996	21,426	23,069	23,654	25,695	28,196	32,737	36,163	38,335	40,593	44,539	50,660	54,572	58,120	62,428	65,475	72,055
40	17,917	20,707	22,164	23,838	24,433	26,509	29,051	33,660	37,134	39,335	41,622	45,616	51,805	55,758	59,342	63,691	66,766	73,403

Table 2: $t-$distribution

$$P(t \geq t_\alpha) = 1 - F(t_\alpha) = \alpha$$

ϕ	0,400	0,300	0,250	0,200	0,150	0,100	0,050	0,025	0,010	0,005	0,001
1	0,325	0,727	1,000	1.376	1.963	3,078	6,314	12,71	31,82	63,66	318,3
2	0,289	0,617	0,816	1.061	1.386	1,886	2,920	4,303	6,965	9,925	22,33
3	0,277	0,584	0,765	0.978	1.250	1,638	2,353	3,182	4,541	5,841	10,21
4	0,271	0,569	0,741	0.941	1.190	1,533	2,132	2,776	3,747	4,604	7,173
5	0,267	0,559	0,727	0.920	1.156	1,476	2,015	2,571	3,365	4,032	5,894
6	0,265	0,553	0,718	0.906	1.134	1,440	1,943	2,447	3,143	3,707	5,208
7	0,263	0,549	0,711	0.896	1.119	1,415	1,895	2,365	2,998	3,499	4,785
8	0,262	0,546	0,706	0.889	1.108	1,397	1,860	2,306	2,896	3,355	4,501
9	0,261	0,543	0,703	0.883	1.100	1,383	1,833	2,262	2,821	3,250	4,297
10	0,260	0,542	0,700	0.879	1.093	1,372	1,812	2,228	2,764	3,169	4,144
11	0,260	0,540	0,697	0.876	1.088	1,363	1,796	2,201	2,718	3,106	4,025
12	0,259	0,539	0,695	0.873	1.083	1,356	1,782	2,179	2,681	3,055	3,930
13	0,259	0,538	0,694	0.870	1.079	1,350	1,771	2,160	2,650	3,012	3,852
14	0,258	0,537	0,692	0.868	1.076	1,345	1,761	2,145	2,624	2,977	3,787
15	0,258	0,536	0,691	0.866	1.074	1,341	1,753	2,131	2,602	2,947	3,733
16	0,258	0,535	0,690	0.865	1.071	1,337	1,746	2,120	2,583	2,921	3,686
17	0,257	0,534	0,689	0.863	1.069	1,333	1,740	2,110	2,567	2,898	3,646
18	0,257	0,534	0,688	0.862	1.067	1,330	1,734	2,101	2,552	2,878	3,610
19	0,257	0,533	0,688	0.861	1.066	1,328	1,729	2,093	2,539	2,861	3,579
20	0,257	0,533	0,687	0.860	1.064	1,325	1,725	2,086	2,528	2,845	3,552
21	0,257	0,532	0,686	0.859	1.063	1,323	1,721	2,080	2,518	2,831	3,527
22	0,256	0,532	0,686	0.858	1.061	1,321	1,717	2,074	2,508	2,819	3,505
23	0,256	0,532	0,685	0.858	1.060	1,319	1,714	2,069	2,500	2,807	3,485
24	0,256	0,531	0,685	0.857	1.059	1,318	1,711	2,064	2,492	2,797	3,467
25	0,256	0,531	0,684	0.856	1.058	1,316	1,708	2,060	2,485	2,787	3,450
26	0,256	0,531	0,684	0.856	1.058	1,315	1,706	2,056	2,479	2,779	3,435
27	0,256	0,531	0,684	0.855	1.057	1,314	1,703	2,052	2,473	2,771	3,421
28	0,256	0,530	0,683	0.855	1.056	1,313	1,701	2,048	2,467	2,763	3,408
29	0,256	0,530	0,683	0.854	1.055	1,311	1,699	2,045	2,462	2,756	3,396
30	0,256	0,530	0,683	0.854	1.055	1,310	1,697	2,042	2,457	2,750	3,385
40	0,255	0,529	0,681	0.851	1.050	1,303	1,684	2,021	2,423	2,704	3,307
50	0,255	0,528	0,679	0.849	1.047	1,299	1,676	2,009	2,403	2,678	3,261
100	0,254	0,526	0,677	0.845	1.042	1,290	1,660	1,984	2,364	2,626	3,174
150	0,254	0,526	0,676	0.844	1.040	1,287	1,655	1,976	2,351	2,609	3,145
∞	0,253	0,524	0,674	0.842	1.036	1,282	1,645	1,960	2,326	2,576	3,090

Table 3: $F-$**distribution for** m **and** n **degrees of freedom and a significance level of** $(1-\alpha)=0,95$

													m											
n	1	2	3	4	5	6	7	8	9	10	11	12	15	20	24	30	40	50	60	100	120	200	500	∞
1	161	200	216	225	230	234	237	239	241	242	243	244	246	248	249	250	251	252	252	253	253	254	254	254
2	18,5	19,0	19,2	19,2	19,3	19,3	19,4	19,4	19,4	19,4	19,4	19,4	19,4	19,4	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5	19,5
3	10,1	9,55	9,28	9,12	9,10	8,94	8,89	8,85	8,81	8,79	8,76	8,74	8,70	8,66	8,64	8,62	8,59	8,58	8,57	8,55	8,55	8,54	8,53	8,53
4	7,71	6,94	6,59	6,39	6,26	6,16	6,09	6,04	6,00	5,96	5,94	5,91	5,86	5,80	5,77	5,75	5,72	5,70	5,69	5,66	5,66	5,65	5,64	5,63
5	6,61	5,79	5,41	5,19	5,05	4,95	4,88	4,82	4,77	4,74	4,71	4,68	4,62	4,56	4,53	4,50	4,46	4,44	4,43	4,41	4,40	4,39	4,37	4,36
6	5,99	5,14	4,76	4,53	4,39	4,28	4,21	4,15	4,10	4,06	4,03	4,00	3,94	3,87	3,84	3,81	3,77	3,75	3,74	3,71	3,70	3,69	3,68	3,67
7	5,59	4,74	4,35	4,12	3,97	3,87	3,79	3,73	3,68	3,64	3,60	3,57	3,51	3,44	3,41	3,38	3,34	3,32	3,30	3,27	3,27	3,25	3,24	3,23
8	5,32	4,46	4,07	3,84	3,69	3,58	3,50	3,44	3,39	3,35	3,31	3,28	3,22	3,15	3,12	3,08	3,04	3,02	3,01	2,97	2,97	2,95	2,94	2,93
9	5,12	4,26	3,86	3,63	3,48	3,37	3,29	3,23	3,18	3,14	3,10	3,07	3,01	2,94	2,90	2,86	2,83	2,80	2,79	2,76	2,75	2,73	2,72	2,71
10	4,96	4,10	3,71	3,48	3,33	3,22	3,14	3,07	3,02	2,98	2,94	2,91	2,85	2,77	2,74	2,70	2,66	2,64	2,62	2,59	2,58	2,56	2,55	2,54
11	4,84	3,98	3,59	3,36	3,20	3,09	3,01	2,95	2,90	2,85	2,82	2,79	2,72	2,65	2,61	2,57	2,53	2,51	2,49	2,46	2,45	2,43	2,42	2,40
12	3,18	3,89	3,49	3,26	3,11	3,00	2,91	2,85	2,80	2,75	2,72	2,69	2,62	2,54	2,51	2,47	2,43	2,40	2,38	2,65	2,34	2,32	2,31	2,30
13	4,67	3,81	3,41	3,18	3,03	2,92	2,83	2,77	2,71	2,67	2,63	2,60	2,53	2,46	2,42	2,38	2,34	2,31	2,30	2,26	2,25	2,23	2,22	2,21
14	4,60	3,74	3,34	3,11	2,96	2,85	2,76	2,70	2,65	2,60	2,57	2,53	2,46	2,39	2,35	2,31	2,27	2,24	2,22	2,19	2,18	2,16	2,14	2,13
15	4,54	3,68	3,29	3,06	2,90	2,79	2,71	2,64	2,59	2,54	2,51	2,48	2,40	2,33	2,29	2,25	2,20	2,18	2,16	2,12	2,11	2,10	2,08	2,07
16	4,49	3,63	3,24	3,01	2,85	2,74	2,66	2,59	2,54	2,49	2,46	2,42	2,35	2,28	2,24	2,19	2,15	2,12	2,11	2,07	2,06	2,04	2,02	2,01
17	4,45	3,59	3,20	2,96	2,81	2,70	2,61	2,55	2,49	2,45	2,41	2,38	2,31	2,23	2,19	2,15	2,10	2,08	2,06	2,02	2,01	1,99	1,97	1,96
18	4,41	3,55	3,16	2,93	2,77	2,66	2,58	2,51	2,46	2,41	2,37	2,34	2,27	2,19	2,15	2,11	2,06	2,04	2,02	1,98	1,97	1,95	1,93	1,92
19	4,38	3,52	3,13	2,90	2,74	2,63	2,54	2,48	2,42	2,38	2,34	2,31	2,23	2,16	2,11	2,07	2,03	2,00	1,98	1,94	1,93	1,91	1,89	1,88
20	4,35	3,49	3,10	2,87	2,71	2,60	2,51	2,45	2,39	2,35	2,31	2,28	2,20	2,12	2,08	2,04	1,99	1,97	1,95	1,91	1,90	1,88	1,86	1,84
22	4,30	3,44	3,05	2,82	2,66	2,55	2,46	2,40	2,34	2,30	2,26	2,23	2,15	2,07	2,03	1,98	1,94	1,91	1,89	1,85	1,84	1,82	1,80	1,78
24	4,26	3,40	3,01	2,78	2,62	2,51	2,42	2,36	2,30	2,25	2,21	2,18	2,11	2,03	1,98	1,94	1,89	1,86	1,84	1,80	1,79	1,77	1,75	1,73
26	4,23	3,37	2,98	2,74	2,59	2,47	2,39	2,32	2,27	2,22	2,18	2,15	2,07	1,99	1,95	1,90	1,85	1,82	1,80	1,76	1,75	1,73	1,71	1,69
28	4,20	3,34	2,95	2,71	2,56	2,45	2,36	2,29	2,24	2,19	2,15	2,12	2,04	1,96	1,91	1,87	1,82	1,79	1,77	1,73	1,71	1,69	1,67	1,65
30	4,17	3,32	2,92	2,69	2,53	2,42	2,33	2,27	2,21	2,16	2,13	2,09	2,01	1,93	1,89	1,84	1,79	1,76	1,74	1,70	1,68	1,66	1,64	1,62
40	4,08	3,23	2,84	2,61	2,45	2,34	2,25	2,18	2,12	2,08	2,04	2,00	1,92	1,84	1,79	1,74	1,69	1,66	1,64	1,59	1,58	1,55	1,53	1,51
60	4,00	3,15	2,76	2,53	2,37	2,25	2,17	2,10	2,04	1,99	1,95	1,92	1,84	1,75	1,70	1,65	1,59	1,56	1,53	1,48	1,47	1,44	1,41	1,39
120	3,92	3,07	2,68	2,45	2,29	2,17	2,09	2,02	1,96	1,91	1,87	1,83	1,75	1,66	1,61	1,55	1,50	1,46	1,43	1,37	1,35	1,32	1,28	1,25
200	3,89	3,04	2,65	2,42	2,26	2,14	2,06	1,98	1,93	1,88	1,84	1,80	1,72	1,62	1,57	1,52	1,46	1,41	1,39	1,32	1,29	1,26	1,22	1,19
∞	3,84	3,00	2,60	2,37	2,21	2,10	2,01	1,94	1,88	1,83	1,79	1,75	1,67	1,57	1,52	1,46	1,39	1,35	1,32	1,24	1,22	1,17	1,11	1,00

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Table 4: Durbin–Watson Statistic

Lower (d_{lo}) and upper limit (d_{up}) for a significance level of $(1 - \alpha) = 0,95$. T is the number of observations, J the number of independent variables.

T	$J = 1$		$J = 2$		$J = 3$		$J = 4$		$J = 5$	
	d_{lo}	d_{up}	d_{lo}	d_{up}	d_{lo}	d_{up}	d_{lo}	d_{up}	d_{lo}	d_{up}
10	0,88	1,32	0,70	1,64	0,52	2,02	0,38	2,41	0,24	2,82
15	1,08	1,36	0,95	1,54	0,82	1,75	0,69	1,97	0,56	2,21
16	1,10	1,37	0,98	1,54	0,86	1,73	0,74	1,93	0,62	2,15
17	1,13	1,38	1,02	1,54	0,90	1,71	0,78	1,90	0,67	2,10
18	1,16	1,39	1,05	1,53	0,93	1,69	0,82	1,87	0,71	2,06
19	1,18	1,40	1,08	1,53	0,97	1,68	0,86	1,85	0,75	2,02
20	1,20	1,41	1,10	1,54	1,00	1,68	0,90	1,83	0,79	1,99
21	1,22	1,42	1,13	1,54	1,03	1,67	0,93	1,81	0,83	1,96
22	1,24	1,43	1,15	1,54	1,05	1,66	0,96	1,80	0,86	1,94
23	1,26	1,44	1,17	1,54	1,08	1,66	0,99	1,79	0,90	1,92
24	1,27	1,45	1,19	1,55	1,10	1,66	1,01	1,78	0,93	1,90
25	1,29	1,45	1,21	1,55	1,12	1,66	1,04	1,77	0,95	1,89
26	1,30	1,46	1,22	1,55	1,14	1,65	1,06	1,76	0,98	1,88
27	1,32	1,47	1,24	1,56	1,16	1,65	1,08	1,76	1,01	1,86
28	1,33	1,48	1,26	1,56	1,18	1,65	1,10	1,75	1,03	1,85
29	1,34	1,48	1,27	1,56	1,20	1,65	1,12	1,74	1,05	1,84
30	1,35	1,49	1,28	1,57	1,21	1,65	1,14	1,74	1,07	1,83
31	1,36	1,50	1,30	1,57	1,23	1,65	1,16	1,74	1,09	1,83
32	1,37	1,50	1,31	1,57	1,24	1,65	1,18	1,73	1,11	1,82
33	1,38	1,51	1,32	1,58	1,26	1,65	1,19	1,73	1,13	1,81
34	1,39	1,51	1,33	1,58	1,27	1,65	1,21	1,73	1,15	1,81
35	1,40	1,52	1,34	1,58	1,28	1,65	1,22	1,73	1,16	1,80
36	1,41	1,52	1,35	1,59	1,29	1,65	1,24	1,73	1,18	1,80
37	1,42	1,53	1,36	1,59	1,31	1,66	1,25	1,72	1,19	1,80
38	1,43	1,54	1,37	1,59	1,32	1,66	1,26	1,72	1,21	1,79
39	1,43	1,54	1,38	1,60	1,33	1,66	1,27	1,72	1,22	1,79
40	1,44	1,54	1,39	1,60	1,34	1,66	1,29	1,72	1,23	1,79
45	1,48	1,57	1,43	1,62	1,38	1,67	1,34	1,72	1,29	1,78
50	1,50	1,59	1,46	1,63	1,42	1,67	1,38	1,72	1,34	1,77
55	1,53	1,60	1,49	1,64	1,45	1,68	1,41	1,72	1,38	1,77
60	1,55	1,62	1,51	1,65	1,48	1,69	1,44	1,73	1,41	1,77
65	1,57	1,63	1,54	1,66	1,50	1,70	1,47	1,73	1,44	1,77
70	1,58	1,64	1,55	1,67	1,52	1,70	1,49	1,74	1,46	1,77
75	1,60	1,65	1,57	1,68	1,54	1,71	1,51	1,74	1,49	1,77
80	1,61	1,66	1,59	1,69	1,56	1,72	1,53	1,74	1,51	1,77
85	1,62	1,67	1,60	1,70	1,57	1,72	1,55	1,75	1,52	1,77
90	1,63	1,68	1,61	1,70	1,59	1,73	1,57	1,75	1,54	1,78
95	1,64	1,69	1,62	1,71	1,60	1,73	1,58	1,75	1,56	1,78
100	1,65	1,69	1,63	1,72	1,61	1,74	1,59	1,75	1,57	1,78