

Note: If df=1 and HA is directional, the column heading should be multiplied by 1/2 when bracketing the P-value.

Critical Values for Chi-Square Distribution.

df	Upper Tail Probability									
	0.2	0.1	0.05	0.04	0.03	0.025	0.02	0.01	0.005	0.0005
1	1.642	2.706	3.841	4.218	4.709	5.024	5.412	6.635	7.879	12.116
2	3.219	4.605	5.991	6.438	7.013	7.378	7.824	9.210	10.597	15.202
3	4.642	6.251	7.815	8.311	8.947	9.348	9.837	11.345	12.838	17.730
4	5.989	7.779	9.488	10.026	10.712	11.143	11.668	13.277	14.860	19.997
5	7.289	9.236	11.070	11.644	12.375	12.833	13.388	15.086	16.750	22.105
6	8.558	10.645	12.592	13.198	13.968	14.449	15.033	16.812	18.548	24.103
7	9.803	12.017	14.067	14.703	15.509	16.013	16.622	18.475	20.278	26.018
8	11.030	13.362	15.507	16.171	17.010	17.535	18.168	20.090	21.955	27.868
9	12.242	14.684	16.919	17.608	18.480	19.023	19.679	21.666	23.589	29.666
10	13.442	15.987	18.307	19.021	19.922	20.483	21.161	23.209	25.188	31.420
11	14.631	17.275	19.675	20.412	21.342	21.920	22.618	24.725	26.757	33.137
12	15.812	18.549	21.026	21.785	22.742	23.337	24.054	26.217	28.300	34.821
13	16.985	19.812	22.362	23.142	24.125	24.736	25.472	27.688	29.819	36.478
14	18.151	21.064	23.685	24.485	25.493	26.119	26.873	29.141	31.319	38.109
15	19.311	22.307	24.996	25.816	26.848	27.488	28.259	30.578	32.801	39.719
16	20.465	23.542	26.296	27.136	28.191	28.845	29.633	32.000	34.267	41.308
17	21.615	24.769	27.587	28.445	29.523	30.191	30.995	33.409	35.718	42.879
18	22.760	25.989	28.869	29.745	30.845	31.526	32.346	34.805	37.156	44.434
19	23.900	27.204	30.144	31.037	32.158	32.852	33.687	36.191	38.582	45.973
20	25.038	28.412	31.410	32.321	33.462	34.170	35.020	37.566	39.997	47.498
21	26.171	29.615	32.671	33.597	34.759	35.479	36.343	38.932	41.401	49.011
22	27.301	30.813	33.924	34.867	36.049	36.781	37.659	40.289	42.796	50.511
23	28.429	32.007	35.172	36.131	37.332	38.076	38.968	41.638	44.181	52.000
24	29.553	33.196	36.415	37.389	38.609	39.364	40.270	42.980	45.559	53.479
25	30.675	34.382	37.652	38.642	39.880	40.646	41.566	44.314	46.928	54.947
26	31.795	35.563	38.885	39.889	41.146	41.923	42.856	45.642	48.290	56.407
27	32.912	36.741	40.113	41.132	42.407	43.195	44.140	46.963	49.645	57.858
28	34.027	37.916	41.337	42.370	43.662	44.461	45.419	48.278	50.993	59.300
29	35.139	39.087	42.557	43.604	44.913	45.722	46.693	49.588	52.336	60.735
30	36.250	40.256	43.773	44.834	46.160	46.979	47.962	50.892	53.672	62.162
31	37.359	41.422	44.985	46.059	47.402	48.232	49.226	52.191	55.003	63.582
32	38.466	42.585	46.194	47.282	48.641	49.480	50.487	53.486	56.328	64.995
33	39.572	43.745	47.400	48.500	49.876	50.725	51.743	54.776	57.648	66.403
34	40.676	44.903	48.602	49.716	51.107	51.966	52.995	56.061	58.964	67.803
35	41.778	46.059	49.802	50.928	52.335	53.203	54.244	57.342	60.275	69.199
36	42.879	47.212	50.998	52.137	53.560	54.437	55.489	58.619	61.581	70.588
37	43.978	48.363	52.192	53.344	54.781	55.668	56.730	59.893	62.883	71.972
38	45.076	49.513	53.384	54.547	56.000	56.896	57.969	61.162	64.181	73.351
39	46.173	50.660	54.572	55.748	57.215	58.120	59.204	62.428	65.476	74.725
40	47.269	51.805	55.758	56.946	58.428	59.342	60.436	63.691	66.766	76.095
41	48.363	52.949	56.942	58.142	59.638	60.561	61.665	64.950	68.053	77.459
42	49.456	54.090	58.124	59.335	60.845	61.777	62.892	66.206	69.336	78.820
43	50.548	55.230	59.304	60.526	62.050	62.990	64.116	67.459	70.616	80.176
44	51.639	56.369	60.481	61.714	63.253	64.201	65.337	68.710	71.893	81.528
45	52.729	57.505	61.656	62.901	64.453	65.410	66.555	69.957	73.166	82.876
46	53.818	58.641	62.830	64.085	65.652	66.617	67.771	71.201	74.437	84.220
47	54.906	59.774	64.001	65.268	66.847	67.821	68.985	72.443	75.704	85.560
48	55.993	60.907	65.171	66.448	68.041	69.023	70.197	73.683	76.969	86.897
49	57.079	62.038	66.339	67.627	69.233	70.222	71.406	74.919	78.231	88.231
50	58.164	63.167	67.505	68.804	70.423	71.420	72.613	76.154	79.490	89.561