Loi normale: P-value

Z-tables : Probability of a larger value

	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.00	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641
0.10	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.20	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
0.30	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
0.40	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
0.50	**0.3085**	**0.3050**	**0.3015**	**0.2981**	**0.2946**	**0.2912**	**0.2877**	**0.2843**	**0.2810**	**0.2776**
0.60	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
0.70	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
0.80	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
0.90	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
1.00	**0.1587**	**0.1562**	**0.1539**	**0.1515**	**0.1492**	**0.1469**	**0.1446**	**0.1423**	**0.1401**	**0.1379**
1.10	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
1.20	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
1.30	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
1.40	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
1.50	**0.0668**	**0.0655**	**0.0643**	**0.0630**	**0.0618**	**0.0606**	**0.0594**	**0.0582**	**0.0571**	**0.0559**
1.60	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
1.70	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
1.80	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
1.90	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
2.00	**0.0228**	**0.0222**	**0.0217**	**0.0212**	**0.0207**	**0.0202**	**0.0197**	**0.0192**	**0.0188**	**0.0183**
2.10	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
2.20	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
2.30	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
2.40	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
2.50	**0.0062**	**0.0060**	**0.0059**	**0.0057**	**0.0055**	**0.0054**	**0.0052**	**0.0051**	**0.0049**	**0.0048**
2.60	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
2.70	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
2.80	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
2.90	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
3.00	**0.0013**	**0.0013**	**0.0013**	**0.0012**	**0.0012**	**0.0011**	**0.0011**	**0.0011**	**0.0010**	**0.0010**
3.10	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
3.20	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
3.30	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
3.40	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
3.50	**0.0002**	**0.0002**	**0.0002**	**0.0002**	**0.0002**	**0.0002**	**0.0002**	**0.0002**	**0.0002**	**0.0002**
3.60	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
3.70	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
3.80	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
3.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.00	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Loi Fischer-Snedecor: P-value

F table : Probability of a larger F value (one tailed test) Page 1

df	Prob>F	1	2	3	4	5	6	7	8	9	10	15	20	30	60	120	240	∞
1	0.05	161	199	216	225	230	234	237	239	241	242	246	248	250	252	253	254	254
	0.025	648	799	864	900	922	937	948	957	963	969	985	993	1001	1010	1014	1016	1018
	0.010	4052	4999	5404	5624	5764	5859	5928	5981	6022	6056	6157	6209	6260	6313	6340	6353	6366
	0.005	16212	19997	21614	22501	23056	23440	23715	23924	24091	24222	24632	24837	25041	25254	25358	25414	25466
2	0.05	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.5
	0.025	38.5	39.0	39.2	39.2	39.3	39.3	39.4	39.4	39.4	39.4	39.4	39.4	39.5	39.5	39.5	39.5	39.5
	0.010	98.5	99.0	99.2	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.5
	0.005	198.5	199.0	199.2	199.2	199.3	199.3	199.4	199.4	199.4	199.4	199.4	199.4	199.5	199.5	199.5	199.5	199.5
3	0.05	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.70	8.66	8.62	8.57	8.55	8.54	8.53
	0.025	17.44	16.04	15.44	15.10	14.88	14.73	14.62	14.54	14.47	14.42	14.25	14.17	14.08	13.99	13.95	13.92	13.90
	0.010	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.34	27.23	26.87	26.69	26.50	26.32	26.22	26.17	26.13
	0.005	55.55	49.80	47.47	46.20	45.39	44.84	44.43	44.13	43.88	43.68	43.08	42.78	42.47	42.15	41.99	41.91	41.83
4	0.05	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.86	5.80	5.75	5.69	5.66	5.64	5.63
	0.025	12.22	10.65	9.98	9.60	9.36	9.20	9.07	8.98	8.90	8.84	8.66	8.56	8.46	8.36	8.31	8.28	8.26
	0.010	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66	14.55	14.20	14.02	13.84	13.65	13.56	13.51	13.46
	0.005	31.33	26.28	24.26	23.15	22.46	21.98	21.62	21.35	21.14	20.97	20.44	20.17	19.89	19.61	19.47	19.40	19.32
5	0.05	6.608	5.786	5.409	5.192	5.050	4.950	4.876	4.818	4.772	4.735	4.619	4.558	4.496	4.431	4.398	4.382	4.365
	0.025	10.007	8.434	7.764	7.388	7.146	6.978	6.853	6.757	6.681	6.619	6.428	6.329	6.227	6.123	6.069	6.042	6.015
	0.010	16.258	13.274	12.060	11.392	10.967	10.672	10.456	10.289	10.158	10.051	9.722	9.553	9.379	9.202	9.112	9.066	9.020
	0.005	22.785	18.314	16.530	15.556	14.939	14.513	14.200	13.961	13.772	13.618	13.146	12.903	12.656	12.402	12.274	12.209	12.144
6	0.05	5.987	5.143	4.757	4.534	4.387	4.284	4.207	4.147	4.099	4.060	3.938	3.874	3.808	3.740	3.705	3.687	3.669
	0.025	8.813	7.260	6.599	6.227	5.988	5.820	5.695	5.600	5.523	5.461	5.269	5.168	5.065	4.959	4.904	4.877	4.849
	0.010	13.745	10.925	9.780	9.148	8.746	8.466	8.260	8.102	7.976	7.874	7.559	7.396	7.229	7.057	6.969	6.925	6.880
	0.005	18.635	14.544	12.917	12.028	11.464	11.073	10.786	10.566	10.391	10.250	9.814	9.589	9.358	9.122	9.001	8.941	8.879
7	0.05	5.591	4.737	4.347	4.120	3.972	3.866	3.787	3.726	3.677	3.637	3.511	3.445	3.376	3.304	3.267	3.249	3.230
	0.025	8.073	6.542	5.890	5.523	5.285	5.119	4.995	4.899	4.823	4.761	4.568	4.467	4.362	4.254	4.199	4.171	4.142
	0.010	12.246	9.547	8.451	7.847	7.460	7.191	6.993	6.840	6.719	6.620	6.314	6.155	5.992	5.824	5.737	5.694	5.650
	0.005	16.235	12.404	10.883	10.050	9.522	9.155	8.885	8.678	8.514	8.380	7.968	7.754	7.534	7.309	7.193	7.135	7.076
8	0.05	5.318	4.459	4.066	3.838	3.688	3.581	3.500	3.438	3.388	3.347	3.218	3.150	3.079	3.005	2.967	2.947	2.928
	0.025	7.571	6.059	5.416	5.053	4.817	4.652	4.529	4.433	4.357	4.295	4.101	3.999	3.894	3.784	3.728	3.699	3.670
	0.010	11.259	8.649	7.591	7.006	6.632	6.371	6.178	6.029	5.911	5.814	5.515	5.359	5.198	5.032	4.946	4.903	4.859
	0.005	14.688	11.043	9.597	8.805	8.302	7.952	7.694	7.496	7.339	7.211	6.814	6.608	6.396	6.177	6.065	6.008	5.951
9	0.05	5.117	4.256	3.863	3.633	3.482	3.374	3.293	3.230	3.179	3.137	3.006	2.936	2.864	2.787	2.748	2.727	2.707
	0.025	7.209	5.715	5.078	4.718	4.484	4.320	4.197	4.102	4.026	3.964	3.769	3.667	3.560	3.449	3.392	3.363	3.333
	0.010	10.562	8.022	6.992	6.422	6.057	5.802	5.613	5.467	5.351	5.257	4.962	4.808	4.649	4.483	4.398	4.354	4.311
	0.005	13.614	10.107	8.717	7.956	7.471	7.134	6.885	6.693	6.541	6.417	6.032	5.832	5.625	5.410	5.300	5.244	5.188
10	0.05	4.965	4.103	3.708	3.478	3.326	3.217	3.135	3.072	3.020	2.978	2.845	2.774	2.700	2.621	2.580	2.559	2.538
	0.025	6.937	5.456	4.826	4.468	4.236	4.072	3.950	3.855	3.779	3.717	3.522	3.419	3.311	3.198	3.140	3.110	3.080
	0.010	10.044	7.559	6.552	5.994	5.636	5.386	5.200	5.057	4.942	4.849	4.558	4.405	4.247	4.082	3.996	3.953	3.909
	0.005	12.827	9.427	8.081	7.343	6.872	6.545	6.303	6.116	5.968	5.847	5.471	5.274	5.071	4.859	4.750	4.695	4.639
11	0.05	4.844	3.982	3.587	3.357	3.204	3.095	3.012	2.948	2.896	2.854	2.719	2.646	2.570	2.490	2.448	2.426	2.404
	0.025	6.724	5.256	4.630	4.275	4.044	3.881	3.759	3.664	3.588	3.526	3.330	3.226	3.118	3.004	2.944	2.914	2.883
	0.010	9.646	7.206	6.217	5.668	5.316	5.069	4.886	4.744	4.632	4.539	4.251	4.099	3.941	3.776	3.690	3.647	3.602
	0.005	12.226	8.912	7.600	6.881	6.422	6.102	5.865	5.682	5.537	5.418	5.049	4.855	4.654	4.445	4.337	4.281	4.226
12	0.05	4.747	3.885	3.490	3.259	3.106	2.996	2.913	2.849	2.796	2.753	2.617	2.544	2.466	2.384	2.341	2.319	2.296
	0.025	6.554	5.096	4.474	4.121	3.891	3.728	3.607	3.512	3.436	3.374	3.177	3.073	2.963	2.848	2.787	2.756	2.725
	0.010	9.330	6.927	5.953	5.412	5.064	4.821	4.640	4.499	4.388	4.296	4.010	3.858	3.701	3.535	3.449	3.405	3.361
	0.005	11.754	8.510	7.226	6.521	6.071	5.757	5.524	5.345	5.202	5.085	4.721	4.530	4.331	4.123	4.015	3.960	3.904

Loi Khi-deux: P-value

Chi Square Table : Probability of a larger Chi Square value (one tailed test)

d.f.	0.995	0.990	0.9750	0.9500	0.9000	0.7500	0.5000	0.250	0.100	0.050	0.025	0.010	0.005
1	0.0000	0.0002	0.0010	0.0039	0.0158	0.1015	0.4549	1.3233	2.7055	3.8415	5.0239	6.6349	7.8794
2	0.0100	0.0201	0.0506	0.1026	0.2107	0.5754	1.3863	2.7726	4.6052	5.9915	7.3778	9.2104	10.5965
3	0.0717	0.1148	0.2158	0.3518	0.5844	1.2125	2.3660	4.1083	6.2514	7.8147	9.3484	11.3449	12.8381
4	0.2070	0.2971	0.4844	0.7107	1.0636	1.9226	3.3567	5.3853	7.7794	9.4877	11.1433	13.2767	14.8602
5	0.4118	0.5543	0.8312	1.1455	1.6103	2.6746	4.3515	6.6257	9.2363	11.0705	12.8325	15.0863	16.7496
6	0.6757	0.8721	1.2373	1.6354	2.2041	3.4546	5.3481	7.8408	10.6446	12.5916	14.4494	16.8119	18.5475
7	0.9893	1.2390	1.6899	2.1673	2.8331	4.2549	6.3458	9.0371	12.0170	14.0671	16.0128	18.4753	20.2777
8	1.3444	1.6465	2.1797	2.7326	3.4895	5.0706	7.3441	10.2189	13.3616	15.5073	17.5345	20.0902	21.9549
9	1.7349	2.0879	2.7004	3.3251	4.1682	5.8988	8.3428	11.3887	14.6837	16.9190	19.0228	21.6660	23.5893
10	2.156	2.558	3.247	3.940	4.865	6.737	9.342	12.549	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	7.584	10.341	13.701	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	8.438	11.340	14.845	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.041	9.299	12.340	15.984	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	10.165	13.339	17.117	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	11.037	14.339	18.245	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	11.912	15.338	19.369	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	12.792	16.338	20.489	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	13.675	17.338	21.605	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	14.562	18.338	22.718	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	15.452	19.337	23.828	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	16.344	20.337	24.935	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	17.240	21.337	26.039	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	18.137	22.337	27.141	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	19.037	23.337	28.241	33.196	36.415	39.364	42.980	45.558
25	10.520	11.524	13.120	14.611	16.473	19.939	24.337	29.339	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	20.843	25.336	30.435	35.563	38.885	41.923	45.642	48.290
27	11.808	12.878	14.573	16.151	18.114	21.749	26.336	31.528	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	22.657	27.336	32.620	37.916	41.337	44.461	48.278	50.994
29	13.121	14.256	16.047	17.708	19.768	23.567	28.336	33.711	39.087	42.557	45.722	49.588	52.335
30	13.787	14.953	16.791	18.493	20.599	24.478	29.336	34.800	40.256	43.773	46.979	50.892	53.672
35	17.192	18.509	20.569	22.465	24.797	29.054	34.336	40.223	46.059	49.802	53.203	57.342	60.275
40	20.707	22.164	24.433	26.509	29.051	33.660	39.335	45.616	51.805	55.758	59.342	63.691	66.766
45	24.311	25.901	28.366	30.612	33.350	38.291	44.335	50.985	57.505	61.656	65.410	69.957	73.166
50	27.991	29.707	32.357	34.764	37.689	42.942	49.335	56.334	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	52.294	59.335	66.981	74.397	79.082	83.298	88.379	91.952
70	43.28	45.44	48.76	51.74	55.33	61.70	69.33	77.58	85.53	90.53	95.02	100.43	104.21
80	51.17	53.54	57.15	60.39	64.28	71.14	79.33	88.13	96.58	101.88	106.63	112.33	116.32
90	59.20	61.75	65.65	69.13	73.29	80.62	89.33	98.65	107.57	113.15	118.14	124.12	128.30
100	67.33	70.06	74.22	77.93	82.36	90.13	99.33	109.14	118.50	124.34	129.56	135.81	140.17
200	152.24	156.43	162.73	168.28	174.84	186.17	199.33	213.10	226.02	233.99	241.06	249.45	255.26
500	422.30	429.39	439.94	449.15	459.93	478.32	499.33	520.95	540.93	553.13	563.85	576.49	585.21
d.f.	0.995	0.990	0.9750	0.9500	0.9000	0.7500	0.5000	0.250	0.100	0.050	0.025	0.010	0.005

Calculs des p-values dans Matlab

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% On ne rejette pas H0 si la p-value >= alpha
%
% On rejette H0 si la p-value < alpha
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%


%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Tests Z à partir de la loi Normale centrée et réduite
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% Test bilatéral
Z=-1.96
pval=1-cdf('Normal',abs(Z),0,1)+cdf('Normal',-abs(Z),0,1)
%ou
pval=2*cdf('Normal',-abs(Z),0,1)
%ou
pval=2*(1-cdf('Normal',abs(Z),0,1))

Z=2.58
pval=1-cdf('Normal',abs(Z),0,1)+cdf('Normal',-abs(Z),0,1)
%ou
pval=2*cdf('Normal',-abs(Z),0,1)
%ou
pval=2*(1-cdf('Normal',abs(Z),0,1))



%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Test unilatéral à gauche
Z=-1.96
pval=cdf('Normal',Z,0,1)
% ou
pval=cdf('norm',Z,0,1)



%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Test unilatéral à droite
Z=1.96
pval=1-cdf('Normal',Z,0,1)
% ou
pval=1-cdf('norm',Z,0,1)
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Tests de student
%%%%%%%%%%%%%%%%%%%%%%%%%
% Test bilatéral
n=1000
k=2

v=n-k

t=-1.96


pval=1-cdf('T',abs(t),v)+cdf('T',-abs(t),v)
%ou
pval=2*cdf('T',-abs(t),v)
%ou
pval=2*(1-cdf('T',abs(t),v))

t=2.58
pval=1-cdf('T',abs(t),v)+cdf('T',-abs(t),v)
%ou
pval=2*cdf('T',-abs(t),v)
%ou
pval=2*(1-cdf('T',abs(t),v))


%%%%%%%%%%%%%%%%%%%%%%%%%
% Test unilatéral à gauche
t=-1.96
pval=cdf('T',t,v)
% ou
pval=cdf('T',t,v)


%%%%%%%%%%%%%%%%%%%%%%%%%
% Test unilatéral à droite
t=1.96
pval=1-cdf('T',t,v)
% ou
pval=1-cdf('T',t,v)
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Test de Fisher unilatéral à droite
v1=2 % dégrées de liberté au numérateur
n=100
k=2
v2=n-k % dégrées de liberté au dénominateur

Ftest=10
pval=1-cdf('f',Ftest,v1,v2)
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Test de Chi2 unilatéral à droite

chi2test=11
v=2
pval=1-cdf('chi2',chi2test,v)
```