Distribution tables

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Standard Normal distribution

Notations

Let us note the random variable Z that follows the standard normal distribution, i.e. which is such that:

$$Z \sim \mathcal{N}(0,1)$$

We note z_α as follows:

$$z_\alpha = \Phi_Z^{-1}(1-\alpha) \quad \text{i.e} \quad \alpha = \int_{z_\alpha}^{+\infty} f_Z(z)dz = 1 - \Phi_Z(z_\alpha)$$

with Φ_Z the cumulative distribution of Z

Distribution table

For one-tailed tests, the value of interest is z_α, whereas for two-tailed tests, we have to look at $z_{\frac{\alpha}{2}}$

Confidence level	**80%**	**85%**	**90%**	**95%**	**98%**	**99%**	**99.5%**	**99.9%**
α	0.20	0.15	0.10	0.05	0.02	0.01	0.005	0.001
z_α	0.842	1.036	1.282	1.645	2.054	2.326	2.576	3.090
$z_{\frac{\alpha}{2}}$	1.282	1.440	1.645	1.960	2.326	2.576	2.807	3.291

t distribution

Notations

Let us note the random variable T that follows a t distribution of n degrees of freedom, i.e. which is such that:

$$T \sim t_n$$

We note t_α as follows:

$$t_\alpha = \Phi_T^{-1}(1-\alpha) \quad \text{i.e} \quad \alpha = \int_{t_\alpha}^{+\infty} f_T(t)dt = 1 - \Phi_T(t_\alpha)$$

with Φ_T the cumulative distribution of T

Distribution table

$\alpha \backslash n$	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
0.20	1.38	1.06	0.98	0.94	0.92	0.91	0.90	0.89	0.88	0.88	0.88	0.87	0.87
0.10	3.08	1.89	1.64	1.53	1.48	1.44	1.41	1.40	1.38	1.37	1.36	1.36	1.35
0.05	6.31	2.92	2.35	2.13	2.02	1.94	1.89	1.86	1.83	1.81	1.80	1.78	1.77
0.025	12.7	4.30	3.18	2.78	2.57	2.45	2.36	2.31	2.26	2.23	2.20	2.18	2.16
0.01	31.8	6.96	4.54	3.75	3.36	3.14	3.00	2.90	2.82	2.76	2.72	2.68	2.65
0.005	63.7	9.92	5.84	4.60	4.03	3.71	3.50	3.36	3.25	3.17	3.11	3.05	3.01
0.001	318.3	22.3	10.2	7.17	5.89	5.21	4.79	4.50	4.30	4.14	4.03	3.93	3.85

$\alpha \backslash n$	**15**	**18**	**20**	**22**	**24**	**26**	**28**	**30**	**40**	**50**	**100**	**200**	$+\infty$
0.20	0.87	0.86	0.86	0.86	0.86	0.86	0.85	0.85	0.85	0.85	0.85	0.84	0.84
0.10	1.34	1.33	1.33	1.32	1.32	1.31	1.31	1.31	1.30	1.30	1.29	1.29	1.28
0.05	1.75	1.73	1.72	1.72	1.71	1.71	1.70	1.70	1.68	1.68	1.66	1.65	1.65
0.025	2.13	2.10	2.09	2.07	2.06	2.06	2.05	2.04	2.02	2.01	1.98	1.97	1.96
0.01	2.60	2.55	2.53	2.51	2.49	2.48	2.47	2.46	2.42	2.40	2.36	2.35	2.33
0.005	2.95	2.88	2.85	2.82	2.80	2.78	2.76	2.75	2.70	2.68	2.63	2.60	2.58
0.001	3.73	3.61	3.55	3.50	3.47	3.43	3.41	3.39	3.31	3.26	3.17	3.13	3.09

χ^2 distribution

Notations

Let us note the random variable K that follows a χ^2 distribution of n degrees of freedom, i.e. which is such that:

$$K \sim \chi_n^2$$

We note q the quantile of the distribution.

Distribution table

$q \backslash n$	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**13**
0.005	0.00	0.01	0.07	0.21	0.41	0.68	0.99	1.34	1.73	2.16	2.60	3.57
0.01	0.00	0.02	0.11	0.30	0.55	0.87	1.24	1.65	2.09	2.56	3.05	4.11
0.025	0.00	0.05	0.22	0.48	0.83	1.24	1.69	2.18	2.70	3.25	3.82	5.01
0.05	0.00	0.10	0.35	0.71	1.15	1.64	2.17	2.73	3.33	3.94	4.57	5.89
0.95	3.84	5.99	7.81	9.49	11.07	12.59	14.07	15.51	16.92	18.31	19.68	22.36
0.975	5.02	7.38	9.35	11.14	12.83	14.45	16.01	17.53	19.02	20.48	21.92	24.74
0.99	6.63	9.21	11.34	13.28	15.09	16.81	18.48	20.09	21.67	23.21	24.72	27.69
0.995	7.88	10.60	12.84	14.86	16.75	18.55	20.28	21.95	23.59	25.19	26.76	29.82

$q \backslash n$	**15**	**18**	**20**	**22**	**24**	**26**	**28**	**30**	**40**	**50**	**100**
0.005	4.60	6.26	7.43	8.64	9.89	11.16	12.46	13.79	20.71	27.99	67.33
0.01	5.23	7.01	8.26	9.54	10.86	12.20	13.56	14.95	22.16	29.71	70.06
0.025	6.26	8.23	9.59	10.98	12.40	13.84	15.31	16.79	24.43	32.36	74.22
0.05	7.26	9.39	10.85	12.34	13.85	15.38	16.93	18.49	26.51	34.76	77.93
0.95	25.00	28.87	31.41	33.92	36.42	38.89	41.34	43.77	55.76	67.50	124.34
0.975	27.49	31.53	34.17	36.78	39.36	41.92	44.46	46.98	59.34	71.42	129.56
0.99	30.58	34.81	37.57	40.29	42.98	45.64	48.28	50.89	63.69	76.15	135.81
0.995	32.80	37.16	40.00	42.80	45.56	48.29	50.99	53.67	66.77	79.49	140.17