

Une variable dichotomique et une variable numérique. Groupes indépendants.

1) σ_1 et σ_2 connus

$$z = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

2) σ_1 et σ_2 inconnus, n_1 et $n_2 \geq 30$

$$z = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

3) σ_1 et σ_2 inconnus, n_1 ou $n_2 < 30$

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2(n_1 - 1) + s_2^2(n_2 - 1)}{n_1 + n_2 - 2}} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad ; \text{ddl} = n_1 + n_2 - 2$$

Une variable dichotomique et une variable numérique. Groupes appariés.

$$t = \frac{\bar{d} - 0}{\frac{s_d}{\sqrt{N}}} \quad \text{ddl} = N - 1$$

Comparaison de pourcentages

1) π_1 et π_2 connus

$$z = \frac{(p_1 - p_2) - (\pi_1 - \pi_2)}{\sqrt{\frac{\pi_1(100 - \pi_1)}{n_1} + \frac{\pi_2(100 - \pi_2)}{n_2}}}$$

2) π_1 et π_2 inconnus; $10 < p_1 < 90$ et $10 < p_2 < 90$

$$z = \frac{(p_1 - p_2) - (\pi_1 - \pi_2)}{\sqrt{\frac{(p_1 n_1 + p_2 n_2)(q_1 n_1 + q_2 n_2)}{(n_1 + n_2)^2}} \sqrt{\frac{n_1 + n_2}{n_1 n_2}}}$$

Deux variables nominales

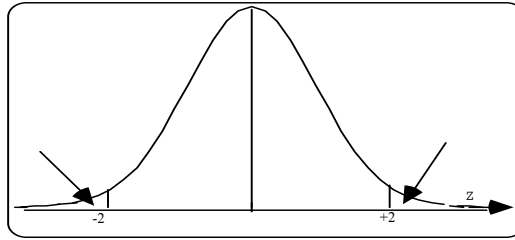
$$\chi^2 = \sum \frac{(\text{effectif observé} - \text{effectif théorique})^2}{\text{effectif théorique}} \quad ; \text{ddl} = (\text{colonnes} - 1)(\text{lignes} - 1)$$

$$\text{Coefficient utile : } \varphi = \sqrt{\frac{\chi^2}{N}}$$

Deux variables numériques

$$r = \frac{\frac{\sum xy - \frac{\sum x \sum y}{N}}{\sqrt{\sum x^2 - \frac{(\sum x)^2}{N}} \sqrt{\sum y^2 - \frac{(\sum y)^2}{N}}}}{\quad} \quad \text{ddl : } N - 2$$

Loi normale réduite
table z, bilatérale externe cumulée



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	1.00	.992	.984	.976	.968	.960	.952	.944	.936	.928
0.1	.920	.912	.904	.897	.887	.881	.873	.865	.857	.849
0.2	.841	.834	.826	.818	.810	.803	.795	.787	.779	.772
0.3	.764	.757	.749	.741	.734	.726	.719	.711	.704	.697
0.4	.689	.682	.674	.667	.660	.653	.645	.638	.631	.624
0.5	.617	.610	.603	.596	.589	.582	.575	.569	.562	.555
0.6	.549	.542	.535	.529	.522	.516	.509	.503	.497	.490
0.7	.484	.478	.472	.465	.459	.453	.447	.441	.435	.430
0.8	.424	.418	.412	.407	.401	.395	.390	.384	.379	.373
0.9	.368	.363	.358	.352	.347	.342	.337	.332	.327	.322
1.0	.317	.313	.308	.303	.298	.294	.289	.285	.280	.276
1.1	.271	.267	.263	.258	.254	.250	.246	.242	.238	.234
1.2	.230	.226	.222	.219	.215	.211	.208	.204	.201	.197
1.3	.194	.190	.187	.184	.180	.177	.174	.171	.168	.165
1.4	.162	.159	.156	.153	.150	.147	.144	.142	.139	.136
1.5	.134	.131	.129	.126	.124	.121	.119	.116	.114	.112
1.6	.110	.107	.105	.103	.101	.100	.097	.095	.093	.091
1.7	.089	.087	.085	.084	.082	.080	.078	.077	.075	.073
1.8	.072	.070	.069	.067	.066	.064	.063	.062	.060	.059
1.9	.057	.056	.055	.054	.052	.051	.050	.049	.048	.047
2.0	.046	.044	.043	.042	.041	.040	.039	.038	.038	.037
2.1	.035	.035	.034	.033	.032	.032	.031	.030	.029	.028
2.2	.028	.027	.026	.026	.025	.024	.024	.023	.023	.022
2.3	.021	.021	.020	.020	.019	.019	.018	.018	.017	.017
2.4	.016	.016	.016	.015	.015	.014	.014	.014	.013	.013
2.5	.012	.012	.012	.011	.011	.011	.010	.010	.010	.010
2.6	.009	.009	.009	.009	.008	.008	.008	.008	.007	.007
2.7	.007	.007	.007	.006	.006	.006	.006	.006	.005	.005
2.8	.005	.005	.005	.005	.004	.004	.004	.004	.004	.004
2.9	.004	.004	.004	.003	.003	.003	.003	.003	.003	.003
3.0	.003	.002	.001	-						

Table empruntée à FAVERGE "Méthodes statistiques en psychologie appliquée", tome 1, Paris, PUF, 1971.

Valeurs critiques de t, unilatérale et bilatérale externe cumulée

p unilatérale	.25	.15	.10	.05	.025	.01	.005	.0005
p bilatérale	.50	.30	.20	.10	.05	.02	.01	.001
d.d.l. = 1	1	1.96	3.08	6.31	12.7	31.8	63.7	636
5	0.73	1.16	1.48	2.02	2.57	3.36	4.03	6.87
10	0.70	1.09	1.37	1.81	2.23	2.76	3.17	4.59
11	0.70	1.09	1.36	1.80	2.20	2.72	3.11	4.44
12	0.70	1.08	1.36	1.78	2.18	2.68	3.05	4.32
13	0.69	1.08	1.35	1.77	2.16	2.65	3.01	4.22
14	0.69	1.08	1.35	1.76	2.14	2.62	2.98	4.14
15	0.69	1.07	1.34	1.75	2.13	2.60	2.95	4.07
16	0.69	1.07	1.34	1.75	2.12	2.58	2.92	4.01
17	0.69	1.07	1.33	1.74	2.11	2.57	2.90	3.96
18	0.69	1.07	1.33	1.73	2.10	2.55	2.88	3.92
19	0.69	1.07	1.33	1.73	2.09	2.54	2.86	3.88
20	0.69	1.06	1.33	1.72	2.09	2.53	2.84	3.85
21	0.69	1.06	1.32	1.72	2.08	2.52	2.83	3.82
22	0.69	1.06	1.32	1.72	2.07	2.51	2.82	3.79
23	0.69	1.06	1.32	1.71	2.07	2.50	2.81	3.77
24	0.68	1.06	1.32	1.71	2.06	2.49	2.80	3.74
25	0.68	1.06	1.32	1.71	2.06	2.48	2.79	3.72
26	0.68	1.06	1.31	1.71	2.06	2.48	2.78	3.71
27	0.68	1.06	1.31	1.70	2.05	2.47	2.77	3.69
28	0.68	1.06	1.31	1.70	2.05	2.47	2.76	3.67
29	0.68	1.06	1.31	1.70	2.04	2.46	2.76	3.66
30	0.68	1.05	1.31	1.70	2.04	2.46	2.75	3.65
35	0.68	1.05	1.30	1.69	2.03	2.44	2.72	3.55
40	0.68	1.05	1.30	1.68	2.02	2.42	2.71	3.55
60	0.68	1.04	1.30	1.67	2.00	2.39	2.66	3.46
>60=z	0.67	1.04	1.28	1.64	1.96	2.33	2.58	3.29

D'après FISCHER et YATES "Statistical tables for biological, agricultural and medical research", 1948 (Oliver and Boyd, Edinbourg).

Valeurs critiques du χ^2

	.10	.05	.01
d.d.l. = 1	271	3.84	6.64
2	4.60	5.99	9.21
3	6.25	7.82	11.34
4	7.78	9.49	13.28
5	9.24	11.07	15.09
6	10.64	12.59	16.81
7	12.02	14.07	18.48
8	13.36	15.51	20.09
9	14.68	16.92	21.67
10	15.99	18.31	23.21
11	17.28	19.68	24.72
12	18.55	21.03	26.22
13	19.81	22.36	27.69
14	21.06	23.68	29.14
15	22.31	25	30.58
16	23.54	26.3	32
17	24.77	27.59	33.41
18	25.99	28.87	34.8
19	27.2	30.14	36.19
20	28.41	31.41	37.57
21	29.62	32.67	38.93
22	30.81	33.92	40.29
23	32.01	35.17	41.64
24	33.2	36.42	42.98
25	34.38	37.65	44.31
26	35.56	38.88	45.64
27	36.74	40.11	46.96
28	37.92	41.34	48.28
29	39.09	42.56	49.59
30	40.26	43.77	50.89

D'après FISCHER et YATES "Statistical tables for biological, agricultural and medical research", 1948 (Oliver and Boyd, Edinbourg).

Valeurs critiques de r, unilatérale et bilatérale externe cumulée

p unilatérale	.05	.025	.01	.005
p bilatérale	.10	.05	.02	.01
d.d.l. = 3	.81	.88	.93	.96
4	.73	.81	.88	.92
5	.67	.75	.83	.87
6	.62	.71	.79	.83
7	.58	.67	.75	.80
8	.55	.63	.72	.76
9	.52	.60	.69	.73
10	.50	.58	.66	.71
11	.48	.55	.63	.68
12	.46	.53	.61	.66
13	.44	.51	.59	.64
14	.43	.50	.57	.62
15	.41	.48	.56	.61
16	.40	.47	.54	.59
17	.39	.46	.53	.58
18	.38	.44	.52	.56
19	.37	.43	.50	.55
20	.36	.42	.49	.54
25	.32	.38	.45	.49
30	.30	.35	.41	.45
35	.27	.32	.38	.42
40	.26	.30	.36	.39
45	.24	.29	.34	.37
50	.23	.27	.32	.35
60	.21	.25	.29	.32
70	.20	.23	.27	.30
80	.18	.22	.26	.28
90	.17	.21	.24	.27
100	.16	.19	.23	.25

D'après FISCHER et YATES "Statistical tables for biological, agricultural and medical research", 1948 (Oliver and Boyd, Edinbourg).