Experimental Biosciences

Resources for introductory & intermediate level laboratory courses

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- Chi-squared test

- sample problems
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Tables

- Critical values (chi-square)
- Critical values (t test)

Selected Critical Values of the t-Distribution

A test is 2-tailed if you ask the question, 'does population 1 differ from population 2'. Then, if the mean for population 1 is significantly greater *or* smaller than that for population 2, you reject the null hypothesis. If you ask simply, is the true mean for population 1 greater than that for population 2, then you reject the null hypothesis only if the experimental mean for population 1 is found to be significantly greater. It can be significantly smaller, but you weren't asking that question. That would be a one-tailed test. For a two-tailed test if the calculated value of t exceeds the tabled value, then report the p value in the table. For a one-tailed test, the p value is divided by two. So 'p < 0.05' becomes 'p < 0.025."

The table should include values for p=0.1 so that a one-tailed test can be conducted at the p=0.05 level, but we never do such tests in my class, so why clutter up the table?

Degrees of Freedom	p=0.05	p=0.025	p=0.01	p=0.005
1	12.71	25.45	63.66	127.32
2	4.30	6.20	9.92	14.09
3	3.18	4.17	5.84	7.45
4	2.78	3.50	4.60	5.60
5	2.57	3.16	4.03	4.77
6	2.45	2.97	3.71	4.32
7	2.36	2.84	3.50	4.03
8	2.31	2.75	3.36	3.83
9	2.26	2.68	3.25	3.69
10	2.23	2.63	3.17	3.58
11	2.20	2.59	3.11	3.50
12	2.18	2.56	3.05	3.43
13	2.16	2.53	3.01	3.37
14	2.14	2.51	2.98	3.33
15	2.13	2.49	2.95	3.29
16	2.12	2.47	2.92	3.25
17	2.11	2.46	2.90	3.22
18	2.10	2.44	2.88	3.20
19	2.09	2.43	2.86	3.17
20	2.09	2.42	2.84	3.15
21	2.08	2.41	2.83	3.14
22	2.07	2.41	2.82	3.12
23	2.07	2.40	2.81	3.10
24	2.06	2.39	2.80	3.09
25	2.06	2.38	2.79	3.08
26	2.06	2.38	2.78	3.07
27	2.05	2.37	2.77	3.06
28	2.05	2.37	2.76	3.05
29	2.04	2.36	2.76	3.04
30	2.04	2.36	2.75	3.03
40	2.02	2.33	2.70	2.97
60	2.00	2.30	2.66	2.92
120	1.98	2.27	2.62	2.86
infinity	1.96	2.24	2.58	2.81

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