

Two-Sample T-Tests Assuming Equal Variance

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: $\mu_1 \neq \mu_2$

Target Power	Actual Power	N1	N2	N	μ_1	μ_2	$\mu_1 - \mu_2$	σ	Alpha
0.80	0.80704	17	17	34	10.0	0.0	10.0	10.0	0.050
0.90	0.91250	23	23	46	10.0	0.0	10.0	10.0	0.050
0.80	0.80146	64	64	128	10.0	0.0	10.0	20.0	0.050
0.90	0.90323	86	86	172	10.0	0.0	10.0	20.0	0.050
0.80	0.80208	143	143	286	10.0	0.0	10.0	30.0	0.050
0.90	0.90135	191	191	382	10.0	0.0	10.0	30.0	0.050
0.80	0.82837	15	15	30	11.0	0.0	11.0	10.0	0.050
0.90	0.90967	19	19	38	11.0	0.0	11.0	10.0	0.050
0.80	0.80097	53	53	106	11.0	0.0	11.0	20.0	0.050
0.90	0.90225	71	71	142	11.0	0.0	11.0	20.0	0.050
0.80	0.80091	118	118	236	11.0	0.0	11.0	30.0	0.050
0.90	0.90131	158	158	316	11.0	0.0	11.0	30.0	0.050
0.80	0.80208	12	12	24	12.0	0.0	12.0	10.0	0.050
0.90	0.90719	16	16	32	12.0	0.0	12.0	10.0	0.050
0.80	0.80370	45	45	90	12.0	0.0	12.0	20.0	0.050
0.90	0.90312	60	60	120	12.0	0.0	12.0	20.0	0.050
0.80	0.80365	100	100	200	12.0	0.0	12.0	30.0	0.050
0.90	0.90148	133	133	266	12.0	0.0	12.0	30.0	0.050
0.80	0.82630	11	11	22	13.0	0.0	13.0	10.0	0.050
0.90	0.91148	14	14	28	13.0	0.0	13.0	10.0	0.050
0.80	0.80892	39	39	78	13.0	0.0	13.0	20.0	0.050
0.90	0.90159	51	51	102	13.0	0.0	13.0	20.0	0.050
0.80	0.80202	85	85	170	13.0	0.0	13.0	30.0	0.050
0.90	0.90030	113	113	226	13.0	0.0	13.0	30.0	0.050
0.80	0.84131	10	10	20	14.0	0.0	14.0	10.0	0.050
0.90	0.90595	12	12	24	14.0	0.0	14.0	10.0	0.050
0.80	0.81165	34	34	68	14.0	0.0	14.0	20.0	0.050
0.90	0.90086	44	44	88	14.0	0.0	14.0	20.0	0.050
0.80	0.80509	74	74	148	14.0	0.0	14.0	30.0	0.050
0.90	0.90156	98	98	196	14.0	0.0	14.0	30.0	0.050
0.80	0.84761	9	9	18	15.0	0.0	15.0	10.0	0.050
0.90	0.91690	11	11	22	15.0	0.0	15.0	10.0	0.050
0.80	0.80141	29	29	58	15.0	0.0	15.0	20.0	0.050
0.90	0.90487	39	39	78	15.0	0.0	15.0	20.0	0.050
0.80	0.80146	64	64	128	15.0	0.0	15.0	30.0	0.050
0.90	0.90323	86	86	172	15.0	0.0	15.0	30.0	0.050
0.80	0.84479	8	8	16	16.0	0.0	16.0	10.0	0.050
0.90	0.92237	10	10	20	16.0	0.0	16.0	10.0	0.050
0.80	0.80749	26	26	52	16.0	0.0	16.0	20.0	0.050
0.90	0.90150	34	34	68	16.0	0.0	16.0	20.0	0.050
0.80	0.80587	57	57	114	16.0	0.0	16.0	30.0	0.050
0.90	0.90056	75	75	150	16.0	0.0	16.0	30.0	0.050
0.80	0.83099	7	7	14	17.0	0.0	17.0	10.0	0.050
0.90	0.92258	9	9	18	17.0	0.0	17.0	10.0	0.050
0.80	0.80486	23	23	46	17.0	0.0	17.0	20.0	0.050
0.90	0.90865	31	31	62	17.0	0.0	17.0	20.0	0.050
0.80	0.80109	50	50	100	17.0	0.0	17.0	30.0	0.050
0.90	0.90250	67	67	134	17.0	0.0	17.0	30.0	0.050
0.80	0.80192	6	6	12	18.0	0.0	18.0	10.0	0.050
0.90	0.91683	8	8	16	18.0	0.0	18.0	10.0	0.050
0.80	0.81211	21	21	42	18.0	0.0	18.0	20.0	0.050
0.90	0.90064	27	27	54	18.0	0.0	18.0	20.0	0.050
0.80	0.80370	45	45	90	18.0	0.0	18.0	30.0	0.050

Two-Sample T-Tests Assuming Equal Variance

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: $\mu_1 \neq \mu_2$

Target Power	Actual Power	N1	N2	N	μ_1	μ_2	$\mu_1 - \mu_2$	σ	Alpha
0.90	0.90312	60	60	120	18.0	0.0	18.0	30.0	0.050
0.80	0.84206	6	6	12	19.0	0.0	19.0	10.0	0.050
0.90	0.90299	7	7	14	19.0	0.0	19.0	10.0	0.050
0.80	0.81306	19	19	38	19.0	0.0	19.0	20.0	0.050
0.90	0.90838	25	25	50	19.0	0.0	19.0	20.0	0.050
0.80	0.80867	41	41	82	19.0	0.0	19.0	30.0	0.050
0.90	0.90337	54	54	108	19.0	0.0	19.0	30.0	0.050
0.80	0.87642	6	6	12	20.0	0.0	20.0	10.0	0.050
0.90	0.92907	7	7	14	20.0	0.0	20.0	10.0	0.050
0.80	0.80704	17	17	34	20.0	0.0	20.0	20.0	0.050
0.90	0.91250	23	23	46	20.0	0.0	20.0	20.0	0.050
0.80	0.80759	37	37	74	20.0	0.0	20.0	30.0	0.050
0.90	0.90434	49	49	98	20.0	0.0	20.0	30.0	0.050

References

- Julious, S. A. 2010. Sample Sizes for Clinical Trials. Chapman & Hall/CRC. Boca Raton, FL.
- Chow, S.-C., Shao, J., and Wang, H. 2008. Sample Size Calculations in Clinical Research (Second Edition). Chapman & Hall/CRC. Boca Raton, FL.
- Machin, D., Campbell, M., Fayers, P., and Pinol, A. 1997. Sample Size Tables for Clinical Studies, 2nd Edition. Blackwell Science. Malden, MA.
- Zar, Jerrold H. 1984. Biostatistical Analysis (Second Edition). Prentice-Hall. Englewood Cliffs, New Jersey.

Report Definitions

Target Power is the desired power value (or values) entered in the procedure. Power is the probability of rejecting a false null hypothesis.

Actual Power is the power obtained in this scenario. Because N1 and N2 are discrete, this value is often (slightly) larger than the target power.

N1 and N2 are the number of items sampled from each population.

N is the total sample size, $N_1 + N_2$.

μ_1 and μ_2 are the assumed population means for power and sample size calculations.

$\mu_1 - \mu_2$ is the difference between population means at which power and sample size calculations are made.

σ is the assumed population standard deviation for each of the two groups.

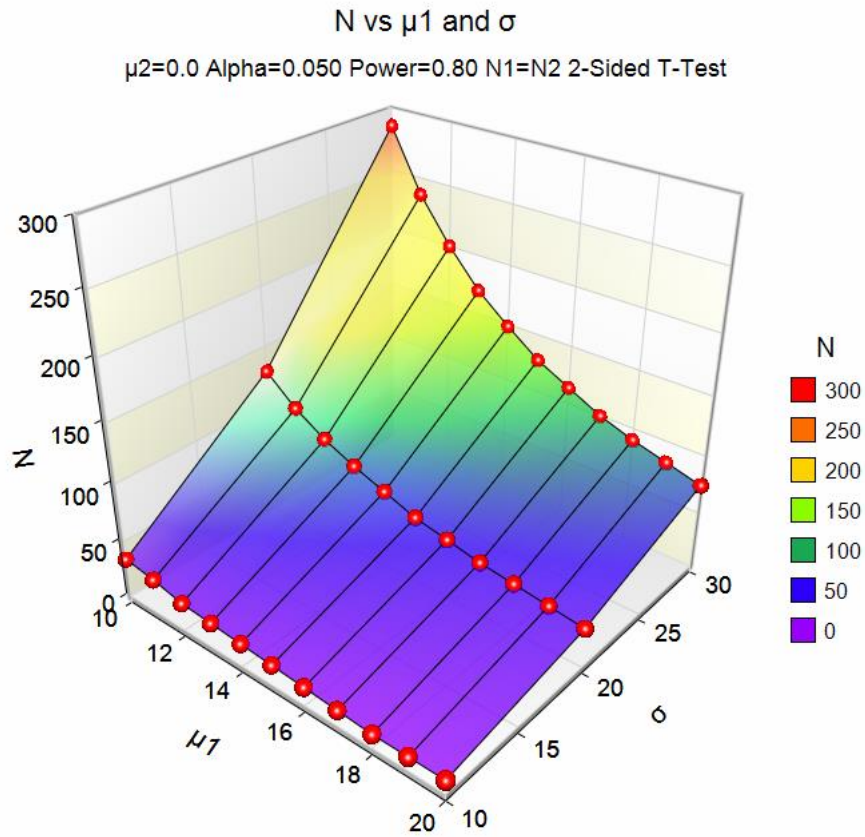
Alpha is the probability of rejecting a true null hypothesis.

Summary Statements

Group sample sizes of 17 and 17 achieve 80.704% power to reject the null hypothesis of equal means when the population mean difference is $\mu_1 - \mu_2 = 10.0 - 0.0 = 10.0$ with a standard deviation for both groups of 10.0 and with a significance level (alpha) of 0.050 using a two-sided two-sample equal-variance t-test.

Two-Sample T-Tests Assuming Equal Variance

Chart Section



Two-Sample T-Tests Assuming Equal Variance

