

One-Way Analysis of Variance F-Tests

Numeric Results

Means: 14.5 12 9.5

	Average		Total		Std Dev of Means	Standard Deviation	Effect Size	Alpha
Power	n	G	N	K	σ_m	σ		
0.8202	14.00	3	42	1.00	2.04	4.00	0.5103	0.0500

References

Desu, M. M. and Raghavarao, D. 1990. Sample Size Methodology. Academic Press. New York.
 Fleiss, Joseph L. 1986. The Design and Analysis of Clinical Experiments. John Wiley & Sons. New York.
 Kirk, Roger E. 1982. Experimental Design: Procedures for the Behavioral Sciences. Brooks/Cole. Pacific Grove, California.

Report Definitions

Power is the probability of rejecting a false null hypothesis. It should be close to one.

n is the average group sample size.

G is the number of groups.

Total N is the total sample size of all groups combined.

K is the group means multiplier.

σ_m is the standard deviation of the group means under the alternative hypothesis.

σ is the within group standard deviation.

The Effect Size is the ratio of σ_m and σ .

Alpha is the probability of rejecting a true null hypothesis. It should be small.

Summary Statements

In a one-way ANOVA study, sample sizes of 14, 14, and 14 are obtained from the 3 groups whose means are to be compared. The total sample of 42 subjects achieves 82% power to detect differences among the means versus the alternative of equal means using an F test with a 0.0500 significance level. The size of the variation in the means is represented by their standard deviation which is 2.04. The common standard deviation within a group is assumed to be 4.00.

Dropout-Inflated Sample Size

Average Group Sample Size			Sample Size	Dropout- Inflated Enrollment Sample Size	Expected Number of Dropouts
n	Group	Dropout Rate	Ni	Ni'	Di
14.00	1 - 3	5%	14	15	1
	Total		42	45	3

Definitions

n is the average group sample size.

Group lists the group numbers.

Dropout Rate (DR) is the percentage of subjects (or items) that are expected to be lost at random during the course of the study and for whom no response data will be collected (i.e. will be treated as "missing").

Ni is the evaluable sample size for each group at which power is computed. If Ni subjects are evaluated out of the Ni' subjects that are enrolled in the study, the design will achieve the stated power.

Ni' is the number of subjects that should be enrolled in each group in order to end up with Ni evaluable subjects, based on the assumed dropout rate. After solving for Ni, Ni' is calculated by inflating Ni using the formula $Ni' = Ni / (1 - DR)$, with Ni' always rounded up. (See Julious, S.A. (2010) pages 52-53, or Chow, S.C., Shao, J., and Wang, H. (2008) pages 39-40.)

Di is the expected number of dropouts in each group. $Di = Ni' - Ni$.

One-Way Analysis of Variance F-Tests**Procedure Input Settings****Autosaved Template File**

C:\Users\joyce\Documents\PASS 15\Procedure Templates\Autosave\One-Way Analysis of Variance F-Tests - Autosaved 2024_4_9-12_48_51.t117

Design Tab

Solve For:	Sample Size
Power:	0.8
Alpha:	0.05
G (Number of Groups):	3
Group Allocation Ratios:	Equal
Input σ_m Using:	List of means (μ_i 's) from which σ_m is calculated
Means ($\mu_1, \mu_2, \dots, \mu_G$):	14.5 12 9.5
K (Means Multiplier):	1
σ (Standard Deviaton):	4