

Simulate 2-Way Analysis of Variance

In teaching or learning statistics, it is valuable to have the ability to create sample problems. This procedure permits you to create data that fits an analysis of variance model with effects for rows and for columns as well as the interaction of rows and columns. The data generated can then be analyzed with the Analysis of Variance procedures. Of course, students might first try to do the calculations themselves by hand!

The dialogue box for this Simulation option is shown below:

Simulate Two-Way, Fixed-Effects ANOVA Data

Directions: Enter the number of levels for Factor A in the edit box below. Press the enter key following your entry. You will then be prompted for the effect size of each treatment except the last (the sum of effects must equal zero.) Repeat for the Factor B and the interaction (cell) effects. Remember, you must press the enter key following EACH entry. Complete entries for the remaining parameters.

Number of Treatment Levels for Factor A: Effect Size for A Level =

Number of Treatment Levels for Factor B: Effect Size for B Level =

Number of Observations Per Cell: Effect Size for Interaction Levels A: and B: =

Population Mean Desired:

Population Standard Deviation:

Figure 1 Dialog to Generate Data for a Two-Way ANOVA

RESULTS FOR SIMULATED TWO-WAY ANOVA DATA

No. of Treatment Levels for Factor A = 2
No. of Treatment Levels for Factor B = 2
No. of observations per cell = 8
Population Mean Desired = 50.000
Population Standard Deviation Desired = 10.000

FACTOR A TREATMENT EFFECTS

Level Effect
1 5.000
2 -5.000

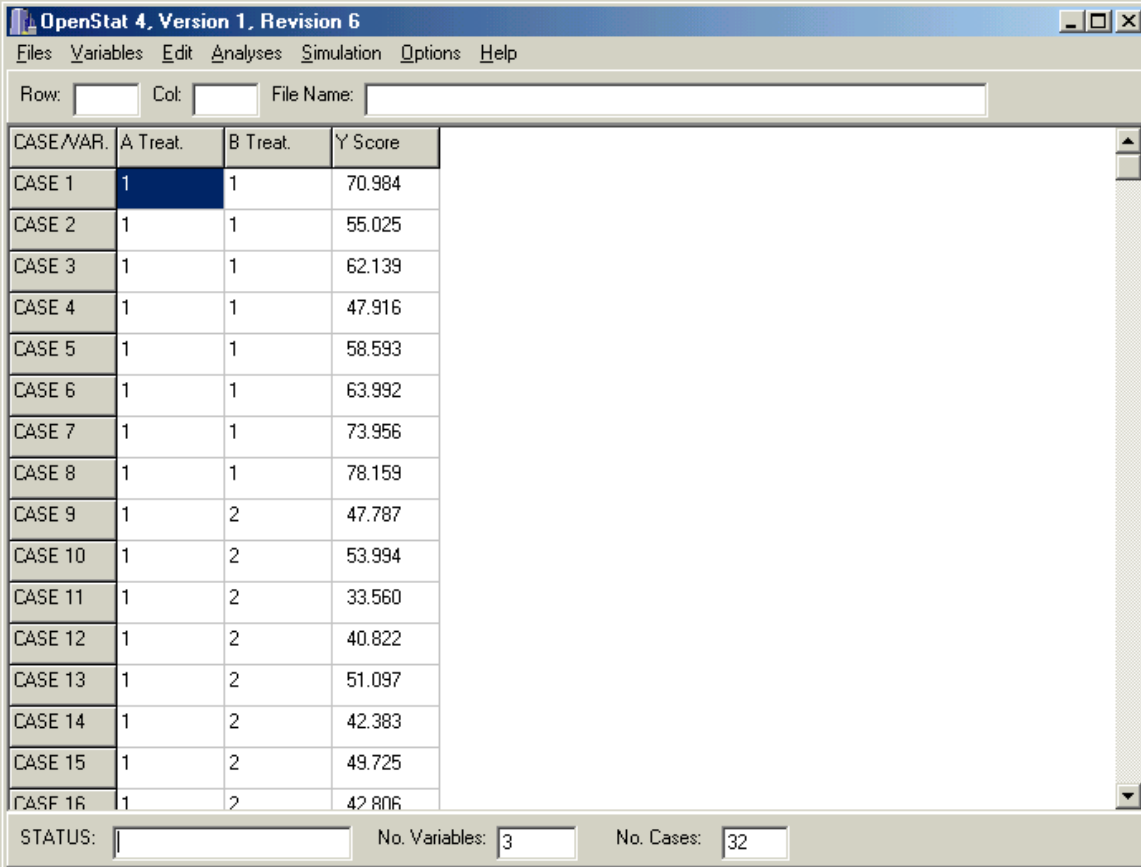
FACTOR B TREATMENT EFFECTS

Level Effect
1 5.000
2 -5.000

TREATMENT INTERACTION EFFECTS

A Level	B Level	Effect
1	1	7.000
1	2	-7.000
2	1	-7.000
2	2	7.000

The data generated are placed in the grid. Note - you should have closed any previously open files.



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Files Variables Edit Analyses Simulation Options Help

Row: Col: File Name:

CASE/VAR.	A Treat.	B Treat.	Y Score
CASE 1	1	1	70.984
CASE 2	1	1	55.025
CASE 3	1	1	62.139
CASE 4	1	1	47.916
CASE 5	1	1	58.593
CASE 6	1	1	63.992
CASE 7	1	1	73.956
CASE 8	1	1	78.159
CASE 9	1	2	47.787
CASE 10	1	2	53.994
CASE 11	1	2	33.560
CASE 12	1	2	40.822
CASE 13	1	2	51.097
CASE 14	1	2	42.383
CASE 15	1	2	49.725
CASE 16	1	2	42.806

STATUS: No. Variables: No. Cases:

Figure 2 Generated Data for a Two-Way ANOVA