

How to run ANOVA in SPSS

In this example, we want to test the claim that there was a difference in the amount of time devoted to inter-network advertising (advertising for station's own programs) per half hour between NBC, CBS, and ABC between Oct. 28 and Nov. 3, 2002. Here are the hypotheses:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

H_a : At least one μ is different than the others



where μ_1 = the mean number of minutes of inter-network advertising time per half hour for all airtime on NBC between Oct. 28 and Nov. 3, 2002

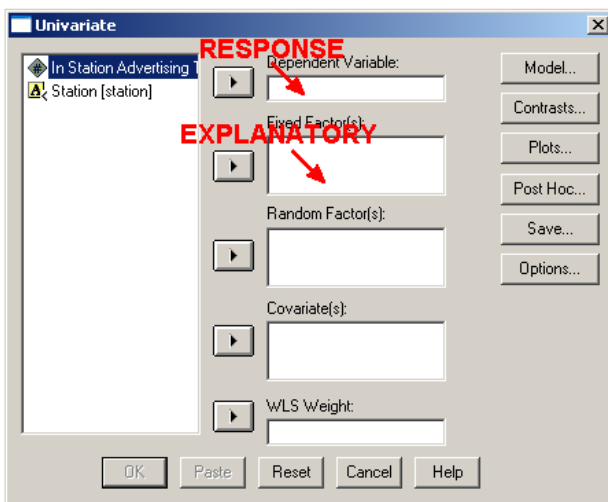
μ_2 = the mean number of minutes of inter-network advertising time per half hour for all airtime on CBS between Oct. 28 and Nov. 3, 2002

μ_3 = the mean number of minutes of inter-network advertising time per half hour for all airtime on ABC between Oct. 28 and Nov. 3, 2002

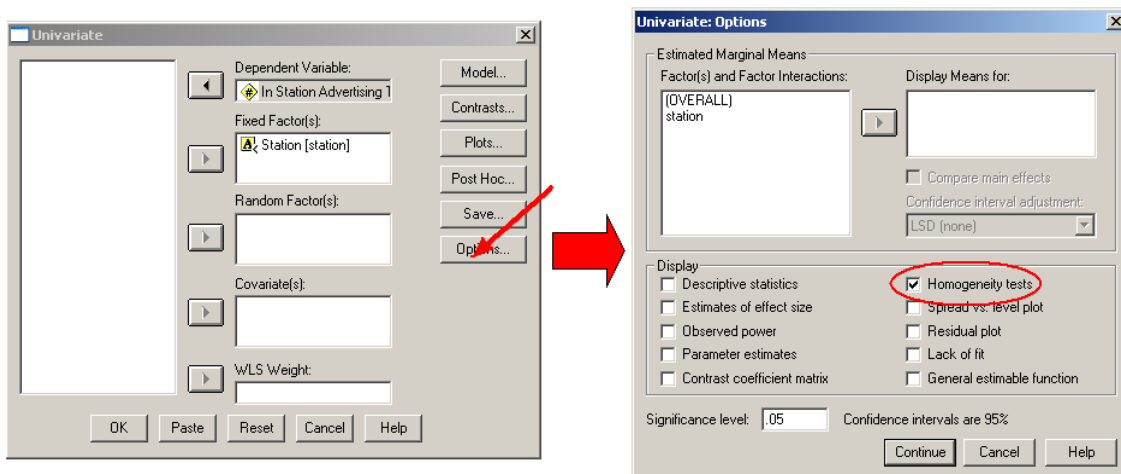
The data set is called '**networkadvert**' and can be found on the class website.

1) In SPSS, go to Analyze→General Linear Model→Univariate...

2) Click the resp. variable (in this case, it's "In Station Advertising"), then click the first right arrow button, , to move it to the Dependent Variable: list. Click the expl. variable (in this case, it's "Station[station]"), then click the second right arrow button, , to move it to the Fixed Factor(s): list.



3) To get a Levene's test for equal σ s, on the right click "Options..." Select "Homogeneity test" and click "Continue"



4) When you get back, click "OK"

5) Your output should look like this:

Univariate Analysis of Variance

Between-Subjects Factors

| | | N |
|---------|-----|----|
| Station | abc | 20 |
| | cbs | 20 |
| | nbc | 20 |

Levene's Test of Equality of Error Variances

Dependent Variable: In Station
Advertising Time Per 1/2 Hour

| F | df1 | df2 | Sig. |
|------|-----|-----|------|
| .688 | 2 | 57 | .507 |

p-value for Levene's test

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept+STATION

$H_0: \sigma_1 = \sigma_2 = \sigma_3$

H_a : At least one σ is different than the others

Tests of Between-Subjects Effects

Dependent Variable: In Station Advertising Time Per 1/2 Hour

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|-----------------|-------------------------|----|-------------|---------|------|
| Corrected Model | 35980.83 ^a | 2 | 17990.417 | 5.796 | .005 |
| Intercept | 385601.7 | 1 | 385601.7 | 124.229 | .000 |
| STATION | 35980.83 | 2 | 17990.417 | 5.796 | .005 |
| Error | 176925.5 | 57 | 3103.956 | | |
| Total | 598508.0 | 60 | | | |
| Corrected Total | 212906.3 | 59 | | | |

p-value for ANOVA

a. R Squared = .169 (Adjusted R Squared = .140)

$H_0: \mu_1 = \mu_2 = \mu_3$

H_a : At least one μ is different than the others