

Two-way Analysis of Variance

LECTURE 15

Objectives

- ▶ Define terms.
- ▶ Understand the need for a two-way analysis of variance.
- ▶ Perform the calculations necessary for a two-way ANOVA.

Overview

- ▶ Sometimes you might think that more than one independent variable influences the behavior of the dependent variable – it is possible to test the effects of more than one independent variable at a time.

Overview

- ▶ You could perform two t-tests or two single factor ANOVAs to test the effects of the independent variables on the dependent variable or you could perform a single Two-way ANOVA.
- ▶ Multiple comparison of Type I error also applies to separate independent variables.

Overview

- ▶ Advantages of the Two-way ANOVA
 - ▶ A single test will tell you if a particular possible independent variable influences a dependent variable.
- ▶ You can test for interaction among the factors (independent variables)

Assumptions

- ▶ Random samples
 - ▶ Independent samples
 - ▶ Normal distribution
 - ▶ Equal variances within treatments
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- ▶ Equal sample sizes improves power and robustness

Example

▶ Example 20

