

(possibly incomplete list of)

Topics Covered in Chapters 6 and 9-11.3

Chapter 6 (and Supplement) – One-Way Analysis of Variance

The one-way ANOVA table and notation (including how to make the table)

The assumptions for the one-way ANOVA

That the modified Levene's test (a.k.a. Brown and Forsythe test) can be used to test the variances are equal

What hypothesis the basic ANOVA F-test (the omnibus test, test) tests

Family-wise (or experiment-wise) type I error rate, α_F , versus comparisonwise type I error rate, α

Conservative vs. Liberal - Holm vs. Bonferroni vs. Fisher

How the Holm Test works

Making a display from the Holm test on all pairs of treatment levels

How to construct contrasts

How to show contrasts are orthogonal (only works when the ANOVA is balanced)

What the estimates and tests corresponding to contrasts tell us

Making confidence intervals for contrasts

When to use each of the following: the basic ANOVA test, Holm test for each pair of tests, and Contrasts

Interpreting the SAS output

Topics Not Covered from Chapter 6

Pg. 238-239 - Hartley's F-max test

Pgs. 249-252 - Fitting Trends

Pgs. 254-267 - Tukey's HSD, Duncan's Multiple Range, Scheffe

Section 6.8 - Analysis of Means

Chapter 9 (and Supplement) - Factorial Experiments

What Factorial, Fixed Effect, Balanced, and Replications mean

How to use the ANOVA table and how it fits together (but not all the equations)

Partitioning the SSB

The model equation for the two factor ANOVA table with interactions, and what the terms mean

The relationship of the 2 by 2, two factor ANOVA table with interactions to the orthogonal contrasts in a one way ANOVA with A-I, A-II, B-I, B-II (for example).

The model for the factorial models with more factors, for example all the different interaction terms that have to be added

What to do when there are no replications, and why this is necessary

What about the interpretation gets more complicated when there is an interaction

Interpreting the SAS output

Topics Not Covered from Chapter 9

Section 9.4 - Interaction Contrasts, Polynomial Responses, Lack of Fit Test

Sections 10- Random Effects and Non-Factorial Models

Random Effect vs. Fixed Effect

What hypothesis are being tested in a random effects model

If given the E(MS), how they are used to determine which MS go into making the appropriate F

If given the E(MS), how they can be used to estimate the variances

How to read and use the E(MS) from PROC GLM

The purpose of blocking

That each treatment must appear in each row and column once in a Latin square

Why we might want to use a latin square

Topics Not Covered from Chapter 10

Pgs. 469-470 - The definition of relative efficiency and the formula's for it

Pgs. 480-484 - Factorial Experiments in a Randomized Block Design

Section 10.5 - Other Designs

Sections 11.1-11.3 - Dummy Variables

Why the usual formula's don't work for unbalanced or non-factorial data (see example 11.2 pg. 514)

That PROC ANOVA and the means statement in PROC GLM only work for balanced, factorial data

That PROC GLM and the lsmeans statement work fine even if the design isn't balanced or factorial

The basic ideas of coding something as a dummy variable and using regression (pg. 511)