

Model Based Statistics in Biology.

Part IV. The General Linear Model. Multiple Explanatory Variables.

Chapter 14 ANCOVA

ReCap.	Part I (Chapters 1,2,3,4), Part II (Ch 5, 6, 7)
ReCap	Part III (Ch 9, 10, 11)
ReCap	Multiple Regression (Ch 12)
ReCap	ANOVA (fixed and random effects)
Ch 14	ANCOVA
14.1	Comparing regression lines
14.2	Statistical control
14.3	Model revision

Ch14.xls

on chalk board

ReCap Part I (Chapters 1,2,3,4) Quantitative reasoning is based on models, including statistical analysis based on models.

ReCap Part II (Chapters 5,6,7)

Hypothesis testing uses the logic of the null hypothesis to declare a decision.

Estimation is concerned with the specific value of an unknown population parameter.

ReCap (Ch 9, 10,11) The General Linear Model with a single explanatory variable.

ReCap (Ch 12) GLM with more than one regression variable (multiple regression)

ReCap (Ch 13) GLM with more than one categorical variable (ANOVA).

Two fixed factors (Ch 13.1, Ch13.2)

One fixed and one random factor (Paired t-test, Randomized block),

One random and one or more fixed factors (Repeated measures)

Two or more random factors (Hierarchical ANOVA)

Today: Analysis of Covariance - ANCOVA

ANCOVA is a special case of the GLM in which there are both categorical (nominal scale) and regression (ratio scale) explanatory variables.

ANCOVA General Introduction.

The analysis of covariance (ANCOVA) has at least one categorical (ANOVA) variable and at least one ratio scale (regression) variable.

ANCOVA is typically presented as 2 or even 3 different types of analysis. One of these is a comparison of the slopes of two regression lines. Another type is statistical control for a continuous (ratio scale) variable within an ANOVA design. These appear to be different, but as we will see they are based on the same model. The advantage of the GLM approach to ANCOVA is that we only have to learn one procedure to carry out either analysis.