

Homework # 9 assigned 22 April 2003, due 30 April 2003

Read Chapter 13 in Tamhane and Dunlop and Chapter 16 (pages 602-614) in the S-Plus On-line Doc Guide to Statistics, Volume 1. Then do the following problems.

Use the function **aov** in S-Plus to fit the models for this chapter. This function is very similar to **lm**, but will yield additional information on request. You can say something like **my.aov<-aov(y~x1+x2,data=dataf)**, where *y* is the response variable in the data frame, *x1* and *x2* are categorical predictors (factors) in the data frame and *dataf* is the name of the data frame. If *x1* and *x2* actually are numeric, but you wish to treat them as categorical, you can say **my.aov<-aov(y~as.factor(x1)+as.factor(x2),data=dataf)**.

Now **summary(my.aov)** gives an analysis of variance table, **summary.lm(my.aov)** gives regression coefficients. As before, **fitted(my.aov)** gives the fitted values and **resid(my.aov)** gives the residuals. See the S-Plus documentation for some new plotting functions which can be useful (**plot.design**, **plot.factor**, **interaction.plot**).

If the factor B is nested within A, you can say **aov(y~A+B%in%A)** or **aov(y~A+A/B)**.

1. 13.2
2. 13.4
3. 13.10
4. 13.14
5. 13.20 You can use the Yates algorithm or a model with indicator variables.
6. 13.24
7. 13.28 Use the aov function, but be careful of denominators for F tests.
8. 13.30 Use the aov function, but be careful of denominators for F tests.