



Cramming Sam's Tips for Chapter 14: Repeated-measures designs (GLM 4)

One-way repeated-measures ANOVA

- One-way repeated-measures ANOVA compares several means when those means have come from the same entities; for example, if you measured people's statistical ability each month over a year-long course.
- In repeated-measures ANOVA there is an additional assumption: *sphericity*. This assumption needs to be considered only when you have three or more repeated-measures conditions.
- Test for sphericity using *Mauchly's test*. Find the table with this label: if the value in the column labelled *Sig.* is less than .05 then the assumption is violated, if it is greater than .05 then sphericity can be assumed.
- The table labelled *Tests of Within-Subjects Effects* shows the main result of your ANOVA. If the assumption of sphericity has been met then look at the row labelled *Sphericity Assumed*. If the assumption was violated then read the row labelled *Greenhouse-Geisser* (you can also look at *Huynh-Feldt* but you'll have to read this chapter to find out the relative merits of the two procedures). Having selected the appropriate row, look at the column labelled *Sig.* If the value is less than .05 then the means of the groups are significantly different.
- For contrasts and *post hoc* tests, again look to the columns labelled *Sig.* to discover if your comparisons are significant (they will be if the significance value is less than .05).

Factorial repeated-measures ANOVA

- Two-way repeated-measures ANOVA compares several means when there are two independent variables, and the same entities have been used in all conditions.
- Test the assumption of *sphericity* when you have three or more repeated-measures conditions. Find the table labelled *Mauchly's test*: the assumption is violated if the value in the column labelled *Sig.* is less than .05. You should test this assumption for all effects (in a two-way ANOVA this means you test it for the effect of both variables and the interaction term).
- The table labelled *Tests of Within-Subjects Effects* shows the main result of your ANOVA. In a two-way ANOVA you will have three effects: a main effect of each variable and the interaction

between the two. For *each* effect, if the assumption of sphericity has been met then look at the row labelled *Sphericity Assumed*. If the assumption was violated then read the row labelled *Greenhouse–Geisser* (you can also look at *Huynh–Feldt*, but you'll have to read this chapter to find out the relative merits of the two procedures). If the value in the column labelled *Sig.* is less than .05 then the effect is significant.

- Break down the main effects and interaction terms using contrasts. These contrasts appear in the table labelled *Tests of Within-Subjects Contrasts*; again look to the columns labelled *Sig.* to discover if your comparisons are significant (they will be if the significance value is less than .05).