Stat 705, Spring 2015

Three factor ANOVA: Consider the **marketing research** data of problem 24.9 (pp. 1023–1024).

1. Obtain the conditional and averaged interaction plots for these data and discuss whether the various two-factor interactions might be necessary. Broadly discuss the impact of fee schedule, work scope, and supervisory control on quality based on these plots.

2. Looking at the Type III tests from fitting the full three-way interaction model, check whether you can drop the three-way interaction and one or more of the two-way interactions that have Type III p-values larger than 0.05 with *one overall* F-test.

3. For the reduced model in part 2, obtain the standard SAS diagnostic panel from `proc glm` and comment on modeling assumptions. Also obtain plots of the raw residuals $e_{ijkm} = Y_{ijkm} - \hat{Y}_{ijkm}$ versus the indices of each of the three factors i, j, and k, and comment. Write out the fitted, reduced model based on `proc glm` output where you ask for the `solution`.

4. Examine pairwise differences in fee schedule using Tukey's approach, as well as the two differences in work scope across levels of supervisory control using Bonferroni's correction. Use FER = 0.05 in both cases.

Three factor ANOVA: Consider the **electronics assembly** data of problem 24.12 (p. 1025).

Similar to the marketing research problem above, perform a full analysis of these data. When I analyzed these data, the model (and thus interpretation) simplified enormously.