

EMS Discussion

Respond to the following questions individually then discuss your answers in your group. You should hand in both your individual responses and a group response. We will discuss your group responses and then I will lecture on advanced topics.

Suppose J surgical methods are tested at each of I randomly selected hospitals. At each hospital, K doctors are randomly assigned to each surgical method (for a total of JK doctors per hospital). Each doctor operates on n patients. A reasonable model and EMS table for the experiment are presented below.

$$Y_{ijkl} = H_i + M_j + HM_{ij} + D_{k(ij)} + \varepsilon_{ijkl} \left\{ \begin{array}{l} H_i \text{ iid } N(0, \sigma_H^2) \\ \sum_j M_j = 0 \\ HM_{ij} \text{ iid } N(0, \sigma_{HM}^2) \\ D_{k(ij)} \text{ iid } N(0, \sigma_D^2) \\ \varepsilon_{ijkl} \text{ iid } N(0, \sigma^2) \end{array} \right.$$

Construct an ANOVA table, listing for each term the degrees of freedom and expected mean square using the algorithms in Section 12-5. Use the table below to help compute the expected mean squares.

I	J	K	n	
R	F	R	R	Var.
i	j	k	l	Comp.

H_i

M_j

HM_{ij}

$D_{k(ij)}$

$\varepsilon_{l(ijk)}$