Updates for SAS for Mixed Models (Last updated 19May09)

Page 49: 1st paragraph, lines 3-4
Shows only six (out of 120) p-values

Fix: Shows only six (out of 105) p-values

Page 50: 2nd paragraph, line 2
15 x 14/2 = 60 comparisons.

Fix: 15 x 14/2 = 105 comparisons.

Page 104: last paragraph, line 1
Similarly, the simple effect $A|B_2$ is $a_1 - a_2 + (\alpha\beta)_{11} - (\alpha\beta)_{21}$.

Fix: Similarly, the simple effect $A|B_2$ is $\alpha_1 - \alpha_2 + (\alpha\beta)_{12} - (\alpha\beta)_{22}$.

Page 108: lines 6 and 7

$$= \left(1/_{br}\right)^2 Var\left[\sum_{j,k}(\mu_{1k} - \mu_{2k} + w_{1k} - w_{2k} + e_{1jk} - e_{2jk})\right]$$

$$= \left(1/_{br}\right)^2 Var\left[b\sum_{j}(w_{1k} - w_{2k}) + \sum_{k}(e_{ijk} - e_{2jk})\right]$$

Fix:

$$= \left(1/_{br}\right)^2 Var\left[\sum_{j,k}(\mu_{1j} - \mu_{2j} + w_{1k} - w_{2k} + e_{1jk} - e_{2jk})\right]$$

$$= \left(1/_{br}\right)^2 Var\left[b\sum_{k}(w_{1k} - w_{2k}) + \sum_{j,k}(e_{1jk} - e_{2jk})\right]$$

Pages 108-109: starting at the last paragraph on page 108, last sentence
For the simple effect of A given B, e.g., $\mu_{11} - \mu_{21}$, the variance of the estimator is

$$Var[\bar{y}_{11\cdot} - \bar{y}_{12\cdot}] = Var\left[\left(1/_r\right)\sum_{k}(y_{11k} - y_{12k})\right]$$

$$= \left(1/_r\right)^2 Var\left[\sum_{k}(\mu_{11} + r_k + w_{1k} + e_{11k} - \mu_{12} - r_k - w_{1k} - e_{12k})\right]$$

$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (w_{1k} - w_{2k}) + \sum_k (e_{11k} - e_{12k})\right]$$

Fix: For the simple effect of A given B, e.g., $\mu_{11} - \mu_{21}$, the variance of the estimator is

$$Var[\bar{y}_{11\cdot} - \bar{y}_{21\cdot}] = Var\left[\left(\frac{1}{r}\right)\sum_k (y_{11k} - y_{21k})\right]$$

$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (\mu_{11} + r_k + w_{1k} + e_{11k} - \mu_{21} - r_k - w_{2k} - e_{21k})\right]$$
$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (w_{1k} - w_{2k}) + \sum_k (e_{11k} - e_{21k})\right]$$
$$= \frac{2(\sigma_W^2 + \sigma^2)}{r}$$

Page 109: 1st sentence
On the other hand, the simple effect of B given A, e.g., $\mu_{11} - \mu_{12}$, yields a different variance of the estimate:

$$Var[\bar{y}_{11\cdot} - \bar{y}_{21\cdot}] = Var\left[\left(\frac{1}{r}\right)\sum_k (y_{11k} - y_{21k})\right]$$
$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (\mu_{11} + r_k + w_{1k} + e_{11k} - \mu_{21} - r_k - w_{2k} - e_{21k})\right]$$

$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (e_{11k} - e_{12k})\right]$$

Fix: On the other hand, the simple effect of B given A, e.g., $\mu_{11} - \mu_{12}$, yields a different variance of the estimate:

$$Var[\bar{y}_{11\cdot} - \bar{y}_{12\cdot}] = Var\left[\left(\frac{1}{r}\right)\sum_k (y_{11k} - y_{12k})\right]$$
$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (\mu_{11} + r_k + w_{1k} + e_{11k} - \mu_{12} - r_k - w_{1k} - e_{12k})\right]$$
$$= \left(\frac{1}{r}\right)^2 Var\left[\sum_k (e_{11k} - e_{12k})\right]$$
$$= \frac{2\sigma^2}{r}$$