LINEAR MODELS FOR UNBALANCED DATA

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CORRIGENDA

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Page/Line

145, 147, 149, 151 and 153/running head:

THE NO-INTERACTION MODEL *should be* TESTING FOR INTERACTIONS .

145/title to 5.4: THE NO-INTERACTION MODEL *should be* TESTING FOR INTERACTIONS .

XV/7: The no-interaction model *should be* Testing for interactions .

148/1: To **b.** *add* for the no-interaction model .

xv/9: *After* squares *add* for the no-interaction model .

151/12: To **e.** *add* corresponding to $\mathfrak{R}(\mu_{ij} \mid \mu_i, \tau_j)$.

xv/12: *After* hypothesis *add* corresponding to $\mathfrak{R}(\mu_{ij} \mid \mu_i, \tau_j)$.

Note: In the two preceding symbols $\mathfrak{R}$ gets typeset as script cap R .
Either none, or all, of the preceding 11 corrections should be made .

8/15: possibly *should be* possible

9/lower right: Section listings *should be* as follows:

4.6d	4.10	Chpts. 2
5.5a	5.4	4
9.1g	9.2	5
12.1a	10.3	10

*26/6: The third $\sum$ *should be* $\sum_i$.

*44/line after (91): The (98) *should be* (87) .

45/4 up: SSSM *should be* SSM .

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* Corrections identified 1989 – 1991.

*47/2 and 8: Every $\sum$ *should be* $\sum_i$.

46/eq. (99): (1/n) *should be* $(1/n_i)$.

√57/9: *Change* Section 4.5a *to* Sections 4.6d and 4.7a .

79/eq. (1): $\overline{y}_{ij}./n_{ij}$ *should be* $\overline{y}_{ij}. = y_{ij}./n_{ij}$.

*80/7: The last symbol, n_i, *should be* $n_i.$.

*83/9: (13) and (14) *should be* (14) and (15) .

*83/11 up: (13) *should be* (14) .

*85/(31): $\frac{14}{3}$ *should be* $\frac{41}{3}$.

√87/Eq. (31): 14/3 *should be* 41/3 . (41 not 14)

*90/12: N *should be* $\mathcal{N}$. (script en)

√92/9: $v(\rho_i)$ *should be* $v(\hat{\rho}_i)$. (a hat is needed)

*93/4: $\tilde{y}...$ *should be* $\overline{y}...$. (bar not tilde)

93/16 up: (48) *should be* (47) .

93/12 up: In $\frac{1}{8}(4\mu_{21} + \mu_{22} + \mu_{23})$ the μ_{23} *should be* $3\mu_{23}$.

*94/4: $+ \mu_{13}$ *should be* $2\mu_{13}$. (add 2)

*94/19: $/n_i.$ *should be* $/n_{ij}$. (sub ij not i .)

*94/2 below (50): 1/a *should be* 1/b .

*95/3: $/n_{.j}$ *should be* $/n_{ij}$. (sub ij not ·j)

97/4 up: **Proof.** *should be* **Proof of (i)** . [insert of (i)]

98/8: *Put* Q.E.D. *on right margin* .

98/3 below eq.(56): *Delete* Q.E.D. .

*99/9 up and 7 up: y_{ij} *should be* y_{ijk} . (add k to sub)

√102/10 up: 9.3j *should be* 9.2j

*104/7 up: $-\hat{y}...)$ *should be* $-\hat{y}..)$. (delete one dot)

*104/up: $n_i.$ *should be* n_i . (delete sub dot)

√ Corrections identified 1991-1997.

*107/5: n_i *should be* $n_{i\cdot}$. (add sub dot)

*107/12 up: SSA *should be* SSA_w . (add sub w)

√107/3 up: (52) *should be* (40) .

107/last: r_k *should be* r_j . (sub j not k)

111/last line Table 48: The first term after the first = sign is $\mathfrak{R}(\tau_j \mid \mu)$, but *should be* $\mathfrak{R}(\mu_i \mid \mu)$.

Note: $\mathfrak{R}$ is to be typeset as script cap R .

√112/last line of Table 4.9: γ_i' *should be* γ_j' . (subscript j not i)

115/14: One *should be* ones . (add s)

*117/last line before 4.10: sum *should be* sums . (add s)

√121/2 below Table 11.11: 9.3g *should be* 9.2g .

*121/(112): ρ_j' *should be* ρ_i' . (sub i not j)

122/Partitioning II: The tens digits under the "Sum of squares" heading should be interchanged; i.e., 83 *should be* 93 and 93 *should be* 83. Fraction remain unchanged.

*122/7 up: τ_j *should be* τ_1 . (sub 1 not j)

*122/(113): τ_j *should be* τ_1 . (sub 1 not j)

√127/9, Eqs (15),(16): *The* $\sum_k$ *should be* $\sum_j$; *and* n_i *should be* n_{ij} .

√129/4: $y_{\cdot j\cdot}$ *should be* $\overline{y}_{\cdot j\cdot}$. (add a bar)

131/4: In Y: the X:3,7 *should be* 3,7 . (delete X:)

*134/4 up: μ_{12} and μ_{13} *should be* $\hat{\mu}_{12}$ and $\hat{\mu}_{13}$. (add hats)

√134/5 up: *add* 'for Table 5.1' before are .

*135/2 after (12): ρ_2'' *should be* ρ_2' . (single prime only)

136/Table 5.2, line labeled Residual: *Put a bar over* $y_{ij\cdot}$ *so that* $\sum_i \sum_j \sum_k (y_{ijk} - y_{ij\cdot})^2$ *should be* $\sum_i \sum_j \sum_k (y_{ijk} - \overline{y}_{ij\cdot})^2$. (add a bar)

√136/7 up: Add a prime to ω and $\hat{\omega}$.

√143/Eq. (21): *The denominator* 121 *should be* 21 .

145/10 up: a. Fitting the model. *should be* Fitting the no-interaction model. .

147/last: The second from right + *should be* = .

*156/Table 5.8: In the first (d.f.) column the last 1 (one) *should be* 2 .

√159/Eq (55): Change what comes after the second equal sign to be

$$\tfrac{1}{2}(\mu_{11} + \mu_{12}) - \tfrac{1}{3}(\mu_{21} + \mu_{22} + \mu_{23}) \ .$$

167/last: > *should be* $\geq$.

175/2: The $-\frac{1}{2}\sigma^2$ *should be* $-\frac{1}{3}\sigma^2$.

*182/Table 6.4E, line 2 of (a): *Delete* $\mu+$.

189/last: Q of (69) *should be* Q of (70) . [(69) *should be* (70)]

*201/2 of Table 6.7: R(M) *should be* R(μ) .

√214/4: *After* symmetric *delete* the comma *and add* and real (we deal only with real matrices), .

√216/12 up: $\mathbf{A}^*\mathbf{A}\mathbf{A}^* = \mathbf{A}$ *should be* $\mathbf{A}^*\mathbf{A}\mathbf{A}^* = \mathbf{A}^*$. (add a star)

√217/4 above Eq. (8): *Replace* positive semi *with* non-negative .

*218/3 below (17): $\mathbf{P}\mathbf{X} = \mathbf{Q}\mathbf{X}$ *should be* $\mathbf{P}\mathbf{X}' = \mathbf{Q}\mathbf{X}'$. (add primes)

√223/1st line of **Example**: *Delete* of *after* $\mathbf{G}$ *and put after* $\mathbf{X}'\mathbf{X}$.

*224/3 below (35): $\begin{bmatrix} \mathbf{X}_1'\mathbf{X}_1 & \mathbf{X}_1'\mathbf{X}_2 \\ \mathbf{X}_2'\mathbf{X}_1 & \mathbf{X}_2'\mathbf{X}_2 \end{bmatrix}$ = *should be* $\begin{bmatrix} \mathbf{X}_1'\mathbf{X}_1 & \mathbf{X}_1'\mathbf{X}_2 \\ \mathbf{X}_2'\mathbf{X}_1 & \mathbf{X}_2'\mathbf{X}_2 \end{bmatrix}^-$ = . (add superscript minus)

√224/2 up: $(\mathbf{X}_2'\mathbf{M}_1\mathbf{X}_2)$ *should be* $(\mathbf{X}_2'\mathbf{M}_1\mathbf{X}_2)^-$. (add superscript minus)

*224/last: *2 spaces are needed before* $\mathbf{I}$.

226/7: f *should be* F . (cap F)

√232/last: $\mathbf{D}_r$ *should be* $\mathbf{\Delta}_r$.

234/last line before -ii: used in *should be* used at (79) in .

√237/6: *Between* $\sum_i$ *and* $(\overline{y}_{i\cdot} - \overline{y}_{\cdot\cdot})^2$ *add* n_i .

240/E7.18: 7.2b *should be* 7.3b . (3 not 2)

√246/9 up: *Section 2.10 should be* 8.11 .

247/bottom: *The* 76 *should be* 78 .

*256/8: $\mathbf{y} = \mathbf{X}\boldsymbol{\beta}^0$ *should be* $\hat{\mathbf{y}} = \mathbf{X}\boldsymbol{\beta}^0$. (add hat)

√256/7 up: The boldface N *should be* italic feint.

263/(74): *The off-diagonal* $\mathbf{X}_1'\mathbf{X}_1$ *should be* $\mathbf{X}_2'\mathbf{X}_1$. (sub 2)

√263/Eq. (74): The lower left submatrix *should be* $\mathbf{X}_2'\mathbf{X}_1$ not $\mathbf{X}_1'\mathbf{X}_1$.

√264/3: (60) *should be* (65) .

√267/12: $\mathbf{X}_1\sigma^2$ *should be* $\mathbf{X}_1'\sigma^2$. (add prime)

268/6: The curly R *should be* plain cap R .

269/12 The $\tilde{\boldsymbol{\beta}}_2$ *should be* $\hat{\boldsymbol{\beta}}_2$. (hat, not tilde)

272/Eq. (91): The last term $\mathbf{X}_2\boldsymbol{\beta}_3$ *should be* $\mathbf{X}_3\boldsymbol{\beta}_3$. (sub 2 *should be* 3)

273/line 5 of the body of Table 8.4: + *should be* − .

√276/7: *Replace* Section 7.1d *with* (43), Sec. 7.3 .

√278/3: (106) *should be* (107) .

√282/5 up: $\mathrm{b}\bar{z}_{\cdot\cdot}$ *should be* $\mathrm{b}\bar{z}_{i\cdot}$. (sub i)

291/Eq. (146): *Each* β *should be* β^0 . (add superscript 0)
$(\mathbf{K}'\mathbf{G}\mathbf{K})$ *should be* $(\mathbf{K}'\mathbf{G}\mathbf{K})^{-1}$. (add superscript −1)

291/Eq. (147): *The last* $\mathbf{K}$ *should be* $\mathbf{K}'$. (prime)

√291/5 up: *The first* $(\mathbf{K}'\boldsymbol{\beta} - \mathbf{m})$ *should be* $(\mathbf{K}'\boldsymbol{\beta} - \mathbf{m})'$.

292/(v): $\mathbf{K}\boldsymbol{\beta}$ *should be* $\mathbf{K}'\boldsymbol{\beta}$. (prime on $\mathbf{K}$)

*292/2 below (v): $\geq$ *should be* $\leq$.

295/16: (36) *should be* (66) .

√297/16 up: *After* element *add* (and every linear combination of elements)

√298/17: $\mathbf{K}'\boldsymbol{\beta}^0 =$ *should be* $\mathbf{K}'\boldsymbol{\beta}^0 -$. (minus, not equals)

√299/8: *After* can be *add* (or can be rewritten so as to be)

√301/8 up: $\mathbf{K}_j$ *should be* $\mathbf{k}_j$. (lower case)

305/(169): *Delete the minus sign from the* −2 *in the matrix on the left* .

307/4: $-16 + 11 + 0$ *should be* $-16 - 11 + 0$.

307/11 up: $\mathbf{I} - \mathbf{G}_r\mathbf{X}'\mathbf{X}$ *should be* $\mathbf{G}_r\mathbf{X}'\mathbf{X}$. (delete $\mathbf{I} -$)

308/4: *This should be* $= 89 + \frac{1}{3}(-16 - 11 + 0) = 80$.

308/6 and 7: *After* BLUE *change* $20\frac{2}{3}$ *to* 80 .

308/2 lines below (179): **XB** *should be* $\mathbf{X}\boldsymbol{\beta}$. (**beta** not **B**)

√309/5 up: $1/n$ *should be* $1/n_i$. (add subscript i)

316/12: *The last* **X** *needs a prime:* $\mathbf{X}\mathbf{V}^{-1}y$ *should be* $\mathbf{X}'\mathbf{V}^{-1}y$.

318/eq. (76}: $\mathbf{X}_1 =$ *should be* $\mathbf{X}_1' =$. (add prime)

325/9: *This line ends with* $-\sum_i w_i \tilde{y}_{i\cdot\cdot} / \sum_i w_i)^2$.
(Missing subscript i needed on two $\sum$ symbols and one w)

325/E8.33: The $-\bar{y}_{22\cdot}$ *should be* $+\bar{y}_{22\cdot}$. (+ *not* −)

327/3: all *should be* cell .

*333/3 up: u_{ij} *should be* μ_{ij} . (new not you)

334/10: *Between the last*) *and the period add* $\forall$ j .

336/2 up: *Delete* + **e** .

336/last: *Delete* + **e** .

339/last: *Between* SSE *and* $\sum_i$ *insert* = .

352/2 up: $\bar{y}_{\cdot\cdot}^2$ *should be* $\bar{y}_{i\cdot\cdot}^2$. (add sub i)

356/5 up: $\bar{y}_{ij}^2$ *should be* $\bar{y}_{ij\cdot}^2$. (add sub dot)

357/line 1 of Table 9.1E: H : μ + *should be* H : 10μ + . (insert 10)

358/line 1 of Table 9.2E: H : μ + *should be* H : 10μ + . (insert 10)

*379/3: 9.5 *should be* 9.4 . (4 not 5)

382/3-7: *The matrix should be*

$$\mathbf{T} = \begin{bmatrix} -1/a & -1/b & -\mathbf{1}_a'/b & \cdot \\ 1_a/a & \cdot & -C_a/b & \cdot \\ \cdot & \mathbf{1}_b/b & \mathbf{J}_{b\times a}/ab & -\mathbf{I}_b/a \\ \cdot & \cdot & \cdot & \cdot \end{bmatrix} .$$

388/2 up: $\sum_{j=1}^{c} \frac{1}{n_{ijk}}$ *should be* $\sum_{k=1}^{c} \frac{1}{n_{ijk}}$. (under the right-most $\sum$, the j *should be* k)

*390/(29): $\mu_{ij\cdot}$ *should be* $\bar{\mu}_{ij\cdot}$. (add bar)

391/1 above (33): $(\mu_{ijk}$ *should be* $(\mu_{ijk'})$. [the μ_{ijk} after the (needs a prime on the sub k]

394/8 up: $-\mu_{.22} = 0$ *should be* $+\mu_{.22} = 0$.

394/7 up: $-\mu_{.32} = 0$ *should be* $+\mu_{.32} = 0$.

402/last: $-\mu_{22} = 0$ *should be* $+\mu_{22} = 0$.

[The preceding 3 corrections each consist of *changing the last* $-$ *to* $+$.]

*415/2 up: $\mathbf{I} - \mathbf{X}(\mathbf{X}'\mathbf{X})^{-}\mathbf{X}$ *should be* $\mathbf{I} - \mathbf{X}(\mathbf{X}'\mathbf{X})^{-}\mathbf{X}'$. (add prime)

422, 3 and 4: In equations (20), (25) and (26) $(\mathbf{X}'\mathbf{X})^{-1}$ *should be* $(\mathbf{X}'\mathbf{X})^{-}$.

423/5 up: (18) *should be* (17) .

423/3 up: (25) *should be* (24).

423/last: $-$ *should be* $+$. (change minus to plus)

424/13: $\mathbf{Zb}$ *should be* $\mu\mathbf{1} + \mathbf{Zb}$. (add $\mu\mathbf{1} +$)

424/14: $\mathrm{R}(\mathbf{b}/\mu)$ *should be* $\mathrm{R}(\mathbf{b}\,|\,\mu)$. (vertical line)

425/2nd to last line of part (a) of Table 11.4: $\mathbf{y}'\bar{\mathbf{y}}$ *should be* $\mathbf{y}'\mathbf{y}$. (delete bar)

425/3 up of part (b) of Table 11.4: $\mathrm{R}(\boldsymbol{\beta}\,|\,\mu)$ *should be* $\mathrm{R}(\mathbf{b}\,|\,\mu)$. ($\mathbf{b}$ *not* $\boldsymbol{\beta}$)

*427/(29): *Add* $= \left\{ \underset{d}{\mathbf{C}_{n_i}} \right\}$.

430/4 up: $\mathrm{b}_2 = \mathrm{b}$ *should be* $\mathrm{b}_2 = \mathrm{b}_3$.

434/2nd to last: z_1^* *should be* z_i^* . (sub 1 should be i)

435/3: b *should be* $\mathbf{b}$. (bold not feint)

435/4: $\mathbf{b}$ *should be* b . (feint not bold)

435/2 up: c *should be* $\mathbf{c}$. (bold not feint)

443/last: y_1^2 *should be* $\bar{\mathrm{y}}_{i\cdot}^2$. (add bar and sub dot)

447/eq. (103): $\mathrm{y}_{ij\cdot}$ *should be* $\bar{\mathrm{y}}_{ij\cdot}$. (add bar)

448/eq. (109): $-\bar{\mathrm{z}}_{ij\cdot}$ *should be* $-\hat{\lambda}\bar{\mathrm{z}}_{ij\cdot}$. (insert $\hat{\lambda}$)

453/5 up: $\mathbf{P}_{1,yz}$ *should be* $\mathbf{u}_{1,yz}$. ($\mathbf{P}$ should be $\mathbf{u}$)

*453/9 up: $\mathbf{U}_{2,zz}$ *should be* $\mathbf{U}_{2,yz}$. (yz not zz)

454/6: μ *should be* μ_i . (add sub i)

454/last: 7 and 8 *should be* 8 and 9 .

455/2: 2-4 *should be* 2-6 .

455/14: $b_2 =$ *should be* $\tilde{b}_2 =$. (add tilde)

459/12: Under the heading Type III

$R(\dot{\beta} \mid \dot{\mu},\dot{\alpha},\dot{\beta})_{\Sigma}$ *should be* $R(\dot{\beta} \mid \dot{\mu},\dot{\alpha},\dot{\phi})_{\Sigma}$. (The second $\dot{\beta}$ should be $\dot{\phi}$)

466/5: *Delete* (see Grid 12.1) .

466/10: *In heading of* (b) classes *should be* columns .

467/4: Using $\ell_1 = \ell_2 = -1$ and then $\ell_1 = 1 = \ell_2$ *should be*
Using $\ell_2 = 1$, $\ell_3 = -1$ and then $\ell_2 = 1$, $\ell_3 = 0$.
Note: The symbol ℓ used here is just plain el .

467/6: ℓ_1 *should be* ℓ_2 . (sub 2 not 1)

*468/(9): β_3 *should be* β_2 . (sub 2 not 3)

470/12: $n_3 = 1$ *should be* $n_3 = 2$. (1 should be 2)

470/16: $\bar{\mathbf{J}}_1$ *should be* $\bar{\mathbf{J}}_2$. (sub 2 not 1)

470/19-20: $T' = \begin{bmatrix} 2 & 2 & 2 & 0 & 0 & -3 & -3 \\ 0 & 0 & 0 & 2 & 2 & -2 & -2 \end{bmatrix}$ *should be* $T' = \begin{bmatrix} 2 & 2 & 2 & -3 & -3 & 0 & 0 \\ 2 & 2 & 2 & 2 & 2 & -5 & -5 \end{bmatrix}$.

470/2-3 up: In f the $\begin{bmatrix} 6 & 0 \\ 0 & 4 \end{bmatrix}^{-1} \begin{bmatrix} 0 & 6 & 0 & -6 \\ 0 & 6 & 0 & -4 \end{bmatrix}$ *should be* $\begin{bmatrix} 6 & -6 \\ 6 & 4 \end{bmatrix}^{-1} \begin{bmatrix} 0 & 6 & -6 & 0 \\ 0 & 6 & 4 & -10 \end{bmatrix}$.

489/2 below eq. (39): (103) *should be* (94) .

506/eq. (80): $\hat{\sigma}_i$ *should be* $\hat{\sigma}_i^2$. (add superscript 2)

506/12 up: *add* period *after* negative . *Delete* and they are only .

506/13: *Delete whole line* .