

Known errors in *Generalized Additive Models: An Introduction with R*

There are currently 2 printings of the book. The first printing has all the errors listed here. The second printing has only the errors from the section headed ‘first and second printing errors’. To tell which printing you have, go to page vi, and look for the sequence of decreasing numbers, just above the ISBNs. If it ends in 1 then you have the first printing, if 2 is the last number then it’s the second printing.

First and second printing errors

p50 -6 $\mathbf{y} \sim N(\mathbf{L}^{-\top}\mathbf{X}\boldsymbol{\beta}, \mathbf{I}\sigma^2)$ should be $\mathbf{L}^{-\top}\mathbf{y} \sim N(\mathbf{L}^{-\top}\mathbf{X}\boldsymbol{\beta}, \mathbf{I}\sigma^2)$.

p69 line above (2.5) should be ‘... maximized *log* likelihoods...’.

p74 Last paragraph of discussion of deviance residuals. It should be $d_i/\phi \sim \chi_1^2$ and both $N(0, 1)$ s should be $N(0, \phi)$ s.

p112 second paragraph: the Taylor expansion is of $\log(f_\theta)$ not f_θ .

p152 5th line of section 4.1.4. Should read “... define $k + m + 2$ knots, $x_1 < x_2 < \dots < x_{k+m+2}$, where the interval over which the spline is to be evaluated lies within $[x_{m+2}, x_{k+1}] \dots$ ”.

p157 -8 ‘final M columns’ should be ‘final $n - M$ columns’.

p192, equation 4.40: summation should run from ‘ $i = 1$ ’.

p201 The functions should be f_1 , f_3 and f_5 , rather than those given on the x axis labels.

p303 Section 6.3.1 If you get somewhat different answers to those given in the text: this is a feature of the `nlme` revision process.

p319, -7 ‘isotropy’ not ‘isototropy’.

p381 D. Besger should read A. Brezger. Sorry.

First printing only errors

Please send updates! (Special thanks to Miland Joshi for a hefty proportion of these.)

Mallow's should be *Mallows'* throughout.

The date cited for Venables and Ripley should be 2002.

xvii Roger Nisbet was inadvertently omitted from the list of acknowledgements (the book wouldn’t have happened without him. Whether this is a good or a bad thing...)

p7 Section 1.1.3 (1.4): ‘ x_i ’ should be ‘ x_i^2 ’.

p8 +6: ‘ $\sigma_{\hat{\beta}} = \dots$ ’ should be ‘ $\sigma_{\hat{\beta}}^2 = \dots$ ’.

p8, line after displayed definition of T : the inline equation should be $\sigma_{\hat{\beta}}^2 = (\sum x_i^2)^{-1}\sigma^2$ (i.e. ‘2’ missing twice).

p16 Section 1.3.5. +4. $\mathbf{f} = \mathbf{Q}_f\mathbf{y}$ should be $\mathbf{f} = \mathbf{Q}_f^{\top}\mathbf{y}$

p25 -2 comment should refer to `sc.mod1`

p31 +13 ‘In this case’...

p56 Q7. delete *and the independence of the elements of r*.

p80. In the displayed R code the model formulae in both `glm` calls should be `y~I(-x)-1`.

p101 The displayed code should be

```
> par(mfrow=c(1,2)) # split graph window into 2 panels
> plot(fitted(b4)^0.5,solr$eggs^0.5) # fitted vs. data plot
> plot(fitted(b4)^0.5,residuals(b4)) # resid vs. sqrt(fitted)
```

p108 +7 insert a minus sign before the second derivative of l .

p111-112 2.4.7 and index: *Kullback-Leibler* spelt wrong three times (oh the shame).

p112 -5 $2[l(\hat{\theta}) - l(\theta_K)] \sim \chi_p^2$

p112 -3 (2.31) should be (2.32).

p115 +10 delete second ‘the’.

p119 10(a) ‘AIDs’ should be ‘AIDS’

p131 2nd line of displayed equation in middle of page - there is a factor of 2 missing from the second bracketed term in the summation.

p155 figure 4.4 caption. *absorbition* should be *absorption*.

p157 -12 *top left* $k \times k$ *submatrix*

p163, 4th line of caption to figure 4.7. ‘ $b_5(z)$ ’ should be ‘ $d_5(z)$ ’

p175, first line of figure 4.9 caption, should read ‘Lack of invariance of ordinary cross validation’

p187 -11 to -8 The two equations in step 2 should read $w_i = [V(\mu_i)g'(\mu_i)^2/\omega_i]^{-1/2}$, and $\frac{\partial w_i}{\partial \rho_k} = -\frac{1}{2} \frac{w_i^3}{\omega_i} [V'(\mu_i)g'(\mu_i) + 2V(\mu_i)g''(\mu_i)] \frac{\partial \eta_i}{\partial \rho_k}$.

p188 -12 \mathbf{G} should be \mathbf{G}^{-1}

p194 -16 where $H(x)$ is the Heaviside function (jumping from 0 to 1 at x)

p195 3rd display equation — this is completely garbled. It should read

$$\hat{\beta}_j^T \hat{\mathbf{V}}_{\hat{\beta}_j}^{r-} \hat{\beta}_j / r = \frac{\hat{\beta}_j^T \mathbf{V}_{\hat{\beta}_j}^{r-} \hat{\beta}_j / r}{\hat{\phi} / \phi} \sim F_{r, n-\text{edf}}$$

and the subsequent comment in parantheses should be deleted.

p215 first line of displayed code should include `rss0 <- 0`

p217 question 2(a) middle line of second display equation: x_{i-1} should be x_{i+1} .

p234. An extra line of code would be useful at the top of the page:

```
> e <- residuals(m0); fv <- fitted(m0)
```

p234 +9 to +12. Replace *,or of treating ...original scale).* by: *. Alternatively the apparent mean variance relationship suggests using a log transform of medFPQ to stabilize the variance, but in practice a less extreme 4th root of medFPQ transform produces better residual plots.*

p245. +15 2×101 should be 2×100 (with default treatment of identifiability constraints).

p261. -13 should read `y <- round(f+e*gm1a$sig2^.5) # deal with overdispersion.`

p269. Figure 5.24 should refer to `gssanova1`.

p278-286. Somewhere between when I saw the final proofs and actual printing figures 6.1, 6.2 and 6.3 have become modified. The modifications are in many ways more pleasing on the eye than the originals, but the fact that this is achieved, in part, by the removal of all labeling does create some problems when trying to relate the figures to the text. The correct Figures 6.1-6.3 are shown below as Figures 1-3.

p285. Second set of displayed R output. Although the output was pasted directly from R, if you run this code you will get a different group label order. This doesn't effect anything else.

p290 +12 *machine 3* should be *machine C*.

p310-311. Section 6.4 The scale parameter ϕ has slipped in as an argument of the GLMM Likelihood and its approximate version: this is not really valid as the quadratic approximation used here does not approximate the dependence of the likelihood on the scale parameter. Also, a subscript θ is missing from ψ , twice.

p317 +22/23 'Defining $\mathbf{b} = \sqrt{\mathbf{D}_+}\mathbf{b}_R$ and $\mathbf{Z} = \mathbf{X}_R\sqrt{\mathbf{D}_+^{-1}}$ ' is correct.

p324, final plot command would be slightly better as `plot(ctamm$gam,scale=0)`.

p324, last sentence. 'distribtion' should be 'distribution'.

p333, 5th line of A.5, should read '...It follows immediately that all eigenvalues of \mathbf{Q} have magnitude 1'.

p335 last line of displayed code should have \mathbf{x} in place of \mathbf{y} .

p335 -2 'eigenvector' should read 'eigenvalue'.

p353 Solution to exercise 1 chapter 4. The first 3 lines of the solution should read ' x_{j+1} ' wherever ' x_j ' is printed!

p392 should exist (and did in the final pdf file), but for some reason this page has not been printed, thereby truncating the index by 13 entries: *stable optimization, 183-189; unbiased risk estimator, *see* UBRE; **update**, 100; validation set, 275; variable coefficient model, 168-169, 239; *mixed effects version, 319; variance function, 63; variogram, 264; `vis.gam`, 235,238,241; Wald test, 111,195,240; weighted constrained penalized least squares, 185; wigginess penalty, 148 (*' denotes a sub-entry).

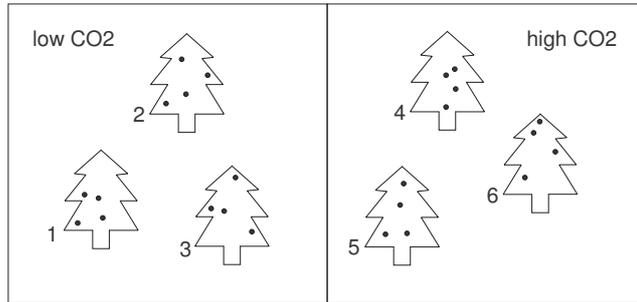


Figure 1: Schematic diagram of the CO₂ experiment.

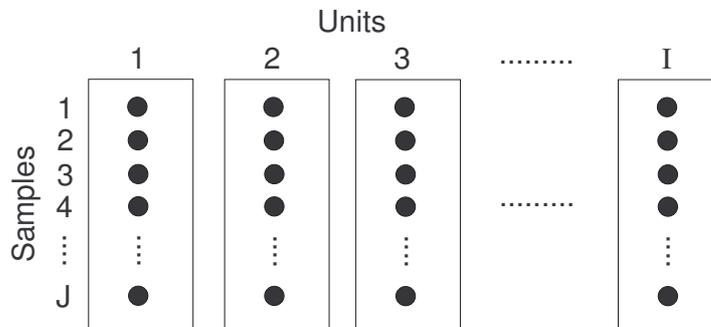


Figure 2: Schematic illustration of the balanced one-way experimental layout discussed in section 6.1.3. Rectangles are experimental units and •'s indicate measurements.

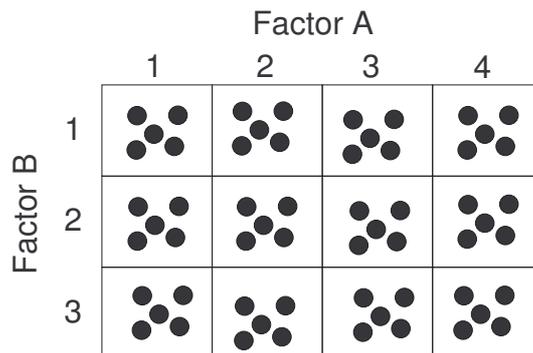


Figure 3: A schematic diagram of a two factor design of the sort discussed in section 6.1.4, with 3 levels of one factor, 4 levels of another and 5 observations for each combination of factor levels. Note that this diagram is not intended to represent the actual physical layout of any experiment.

Simon Wood 18/10/2007.