

ERRATA

for *Semiparametric Regression*

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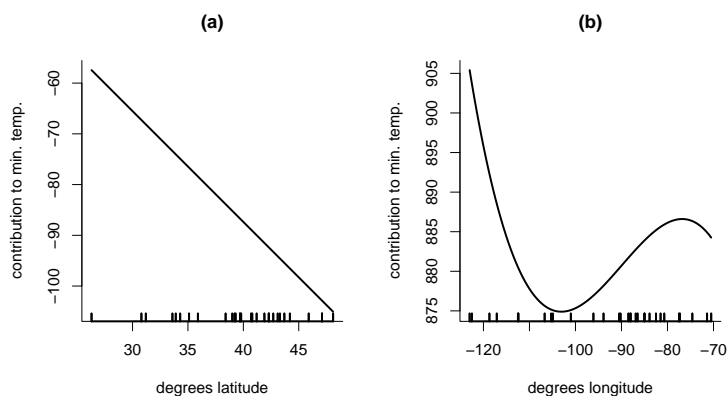
- p.6. In the vertical axis Figure 1.7 the lower “1”, “2” and “3” should have minus signs.
- p.7. In Figure 1.7 UTM represents *Universal Transverse Mercator* coordinates.
- p.9. line –16. “zero-coupon bond sells for \$85” → “zero-coupon bond sells for \$83”.
- p.10. line –15. “Jarrow, Ruppert, and Yu (2001)” → “Jarrow, Ruppert, and Yu (2003)”.
- p.13. line –5. “harvesting.” → “harvesting”.
- p.19. The first line after Figure 19 should be:

$$\widehat{\text{calories}} = 26.2 + 0.202 \text{ sodium} + 49.0 \text{ pork.beef}.$$

and the third and fourth lines should be:

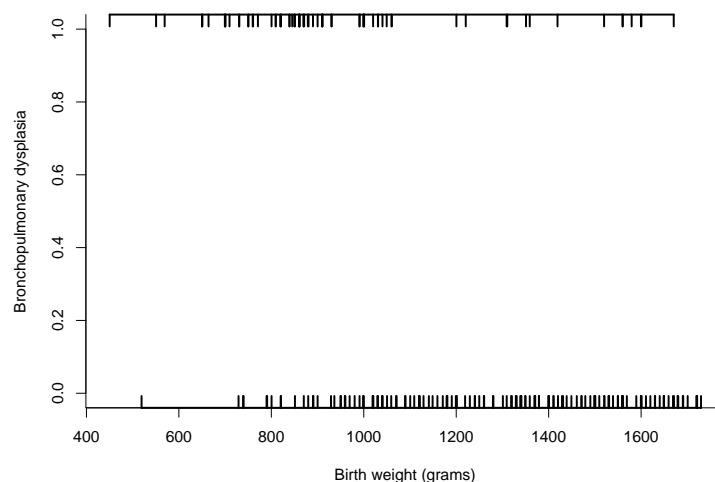
$$\widehat{\text{calories}} = \begin{cases} 75.2 + 0.202 \text{ sodium} & \text{for beef or pork sausages,} \\ 26.2 + 0.202 \text{ sodium} & \text{for poultry sausages.} \end{cases}$$

- p.21. “then” → “than” in 9th line from bottom.
- p.23. line 2. “ $\sigma\sqrt{1 - (i \text{th diagonal entry of } \mathbf{H})} = \sigma\sqrt{1 - H_{ii}}$ ” → “ $\hat{\sigma}\sqrt{1 - (i \text{th diagonal entry of } \mathbf{H})} = \hat{\sigma}\sqrt{1 - H_{ii}}$ ”
- p.23. “line” → “lines” in Figure 2.8 caption.
- p.27. line 1. “ $\sum_{i=1}^{n-k}$ ” → “ $\sum_{i=k+1}^n$ ”.
- p.28. line 6. “ temp_{i-1} ” → “ $\beta_3 \text{temp}_{i-1}$ ”.
- p.35. “smaller” → “the small” in 3rd line above (2.19).
- p.36. line –13. “ $\frac{R_{\text{larger}}^2 - R_{\text{smaller}}^2}{(1 - R_{\text{smaller}}^2)(p_{\text{larger}} - p_{\text{smaller}})/(n - p_{\text{larger}})}$ ” → “ $\frac{R_{\text{larger}}^2 - R_{\text{smaller}}^2}{(1 - R_{\text{larger}}^2)(p_{\text{larger}} - p_{\text{smaller}})/(n - p_{\text{larger}})}$ ”.
- p.37. line 9. “cites” → “cities”.
- pp.38–40. Rug plots are missing from the base of Figures 2.18, 2.19, 2.20 and 2.21. For example, Figure 2.18 should have appeared as:



- p.39. line -9. “ $\widehat{\beta}_{22} \widehat{\beta}_{22}$ ” → “ $\widehat{\beta}_{22} \widehat{\beta}_{23}$ ”.
- p.40. line 7. “boundaries of the bar” should be “boundaries of the band”.
- p.40. line -10. “ $y_i - \widehat{\beta}_1 s_i - \widehat{\beta}_{21} t_i - \widehat{\beta}_{22} t_i^2 - \widehat{\beta}_{23} t_i^3$ ” → “ $y_i - \widehat{\beta}_0 - \widehat{\beta}_1 s_i - \widehat{\beta}_{21} t_i - \widehat{\beta}_{22} t_i^2 - \widehat{\beta}_{23} t_i^3$ ”.
- p.45. “residual variance” → “the residual variance” in the line after the last equation.
- p.46. last line. “Ruppert et al. (1997)” → “Ruppert (1997a)”.
- p.49. line 10. “Marquandt” should be “Marquardt”.
- p.50. lines -4, -3. “independent independent” → “independent”.
- p.56. line 7. “st. dev. (β_i)” should be “st. dev. ($\widehat{\beta}_i$)”.
- p.56. line 1. “ $y - \widehat{y}_i$ ” → “ $y_i - \widehat{y}_i$ ”.
- p.58. lines 1,2. “positions” → “position”.
- p.64. line -6. “(or impossible)” → “or impossible”.
- p.65. The first expression for \mathbf{D} should have its fifth column deleted.
- p.67. line -14. “There are” → “They are”.
- p.69. Equation (3.10). “ $(x - \kappa_k)_+$ ” → “ $(x - \kappa_K)_+$ ”.
- p.69. Equation (3.11). “ $\sum_{k=1}^p$ ” → “ $\sum_{k=1}^K$ ”.
- p.71. line 3. “into (3.8) allows” → “into (3.12) allows”.
- p.73. line -2. “Section 13.2.1” → “Section 13.4.5”.
- p.75. line 2. “ $\beta^T \mathbf{D} \beta$ ” → “ $\lambda^{2p} \beta^T \mathbf{D} \beta$ ”.
- p.82. lines 8-9. There is a slight abuse of notation here, since p in Section 2.4.6 is the number of predictors *including* the intercept. So e.g. a simple linear regression model has $p = 2$. However, on the previous page (p.81) we use p for the degree of the polynomial part of a penalized spline model; so a linear penalized spline has $p = 1$ in Section 3.13.
- p.90. line -2. “degrees freedom” → “degrees of freedom”.
- p.94. line -8. “46.5 degrees of freedom.” → “46.5 degrees of freedom for the intercepts.”
- p.113. line 9. “in concerned” → “is concerned”.
- p.118. Figure 5.5. CV and GCV should be reversed in the legend.
- p.119. line 1. “(3.32)” → “(3.33)”.
- p.119. line -4. “numericalally” → “numerically”.
- p.123. Figure 5.8. Add the following sentence to the end of the caption: “The data correspond to the 50th percentile of the respective RMSE distributions.”
- p.125. line 12.. “Figure 15.3 shows that” → “Figure 15.3 shows the”.
- p.129. In the caption for Figure 5.14 the following sentence should be removed: “The number of knots is coded: 1 = 5 knots, ..., 6 = 120 knots.”
- p.130. In the caption for Figure 5.15 the following sentence should be removed: “The number of knots is coded: 1 = 5 knots, ..., 6 = 120 knots.”
- p.137. line -2. “ $N(0, \sigma^2)$ ” → “ $N(0, \sigma_\varepsilon^2)$ ”.

- p.138. line 7. “Chapter 5” → “Section 5.2”.
- p.139. lines 9–13. The last part of the sentence “Also, if ... fitted curve.” is incorrect. Remove “where ... corresponds to the fitted curve” and finish the sentence at the displayed equation on line 10.
- p.139. line -10. “ $\mathbf{X}_x\{E(\tilde{\boldsymbol{\beta}}|\mathbf{u}) - \tilde{\boldsymbol{\beta}}\} + \mathbf{Z}_x\{E(\tilde{\mathbf{u}}|\mathbf{u}) - \mathbf{u}\}$ ” → “ $\mathbf{X}_x\{E(\tilde{\boldsymbol{\beta}}|\mathbf{u}) - \boldsymbol{\beta}\} + \mathbf{Z}_x\{E(\tilde{\mathbf{u}}|\mathbf{u}) - \mathbf{u}\}$ ”
- p.140. Both occurrences of “ $\hat{\sigma}_\varepsilon$ ” in (6.14) should be removed.
- p.140. “ $\mathbf{C}(\mathbf{C}^T\mathbf{C} + \frac{\sigma_\varepsilon^2}{\sigma_u^2}\mathbf{D})\mathbf{C}^T$ ” → “ $\mathbf{C}(\mathbf{C}^T\mathbf{C} + \frac{\sigma_\varepsilon^2}{\sigma_u^2}\mathbf{D})^{-1}\mathbf{C}^T$ ” in 4th line from the bottom.
- p.151. line -2. “of first” → “of the first”.
- p.153. line 2. “see” → “seen”.
- p.156. line -12. “have same” → “have the same”.
- p.162. line -5. “dashed lines” → “lines”.
- p.163. line 14. “ κ_K ” → “ κ_k ”.
- p.164. line -9. “can be fit” → “can be fitted”.
- p.165. line -3. “is” → “are”.
- p.179. line -5. “the the” → “to the”.
- p.183. line -12. $df_{\text{fit, smaller}} - df_{\text{fit, larger}} \rightarrow df_{\text{res, smaller}} - df_{\text{res, larger}}$.
- p.190. In Table 9.1 the numerical summaries for `hispanic` and `white` should be interchanged.
- p.190. In Figure 9.4 the labels at the base of the plot, `Hispanic` and `White`, should be interchanged.
- p.195. The data are missing from Figure 10.1. The plot that should have appeared is:



- p.196. line -97. “...implement with MCMC than is the logistic.” → “...implement with MCMC than is the logistic (Albert and Chib, 1993).” The reference for this additional paper is:
Albert, J.H. and Chib, S. (1993). Bayesian analysis of binary and polychotomous response data. *Journal of the American Statistical Association*, **88**, 669–679.
- p.197. “distribution” → “distributions” two lines above (10.6).

- p.199. line -8. “ $\log\left(\frac{y}{\eta}\right)$ ” \rightarrow “ $\log\left(\frac{y}{\phi}\right)$ ”.
- p.199. line -6. “ $\log\left(\frac{y}{\eta}\right)$ ” \rightarrow “ $\log\left(\frac{y}{\phi}\right)$ ”.
- p.201. line 1. “ $\mathbf{W}_{2,\widehat{\boldsymbol{\beta}}}^{-1}$ ” \rightarrow “ $\mathbf{W}_{2,\widehat{\boldsymbol{\beta}}}$ ”.
- pp. 201,202. Section 10.7. f should be replaced by μ throughout this section.
- p.201. line -2. The displayed expression should be

$$-\sum_{i=1}^n \log \left\{ V(\mathbf{x}_i^T \boldsymbol{\beta}^{(t)}, \boldsymbol{\theta}) \right\} - \sum_{i=1}^n \frac{\{y_i - \mu(\mathbf{x}_i^T \boldsymbol{\beta}^{(t)})\}^2}{V(\mathbf{x}_i^T \boldsymbol{\beta}^{(t)}, \boldsymbol{\theta})}.$$

- p.204. line 14. Remove “(see e.g. the web site `multilevel.ioe.ac.uk` for various links)”.
- p.205. “Newton-Raphson” \rightarrow “Newton-Raphson method” in the last line.
- p.206. “an only” \rightarrow “only an” in first line of Section 10.8.4.
- p.211. “ $(\widehat{\beta})_i$ ” \rightarrow “ $(\widehat{\beta}_i)$ ” in the last line.
- p.212. line 14. “ $\mathbf{W}_{\boldsymbol{\beta}} = \text{diag}\{H'(\mathbf{X}\boldsymbol{\beta})\}$ ” \rightarrow “ $\mathbf{W}_{\boldsymbol{\beta}} = \text{diag}\{\mathcal{L}'(\mathbf{X}\boldsymbol{\beta})\}$ ”.
- p.214. Caption to Figure 11.1: “plusses” \rightarrow “short vertical bars”.
- p.215. line 17. “enter the the additive” \rightarrow “enter the additive”.
- p.217. Caption to Figure 11.2: “plusses” \rightarrow “short vertical bars”.
- p.218. line 8. “by equation (8.5)” to “by equation (8.5) with $\sigma_{\varepsilon}^2 = \phi = 1$ ”.
- p.219. Section 11.4. \mathbf{X} should be replaced by \mathbf{C} throughout this section.
- p.219. In equations (11.7), (11.8) and (11.9): “ $\frac{1}{2}\boldsymbol{\Lambda}$ ” \rightarrow “ $\boldsymbol{\Lambda}$ ”.
- p.219. line 6. “by equation (8.5)” to “by equation (8.5) with $\sigma_{\varepsilon}^2 = \phi = 1$ ”.
- p.219. line 7. “As before, let” \rightarrow “Let”.
- p.219. line -9. “ $\mathbf{W} = \text{diag}\{\mu'(\mathbf{x}_i^T \widehat{\boldsymbol{\beta}} + \mathbf{z}_i^T \widehat{\mathbf{u}})\}$ ” \rightarrow “ $\mathbf{W} = \text{diag}\{\mu'(\mathbf{X}\widehat{\boldsymbol{\beta}} + \mathbf{Z}\widehat{\mathbf{u}})\}$ ”.
- p.220. line 12. “of the model for” \rightarrow “of the model, respectively, for”.
- p.224. line -15. The displayed equation should read:

$$(x_i, y_i, z_i) = (\text{density}_i, \log.\text{yield}_i, \text{location}_i).$$

- p.226. Section 12.2.1. “ L ” should be replaced by “2” throughout Section 12.2.1 since this section only deals with binary-by-continuous interactions. General L is covered in Section 12.3.3.
- p.228. Figure 12.3. In the legend the symbols and years should line up with each other.
- p.229. line 13. “recordings (respectively) and” \rightarrow “recordings, respectively, and”.
- p.232. Equation (12.13). “ $\beta_{4j} \log(i+1)$ ” \rightarrow “ $\beta_{5j} \log(i+1)$ ”.
- p.232. lines -15, -14. “relative to deviance” \rightarrow “relative to the deviance” and “an overdispersion” \rightarrow “an overdispersion”.
- p.234. “is part of” \rightarrow “are part of” in margin note near bottom.
- p.246. last line. “the t -density with $\nu + \frac{1}{2}$ degrees of freedom” \rightarrow “a t -density with 2ν degrees of freedom”.

- p.251. “ $\text{Cov}(\mathbf{Z}_R \mathbf{u}) = \mathbf{Z}_R$ ” \rightarrow “ $\text{Cov}(\mathbf{Z}_R \mathbf{u}) = \sigma_u^2 \mathbf{Z}_R$ ”
- p.254. “using the design matrices $\mathbf{X} = [1 \ \mathbf{x}_i^T]_{1 \leq i \leq n}$ ” \rightarrow “taking \mathbf{X} to have columns spanning the space of all d -dimensional polynomials in the components of the \mathbf{x}_i with degree less than m ”
- p.255. line -9 . “Nychka and Saltzman 1998” \rightarrow “Johnson, Moore and Ylvisaker 1990; Nychka and Saltzman 1998”. The reference for this additional paper is:
Johnson, M.E., Moore, L.M. and Ylvisaker, D. (1990). Minimax and maximin distance designs. *Journal of Statistical Planning and Inference*, **26**, 131–148.
- p.257. line 9. “ $\mathbf{x}_1, \dots, \mathbf{x}^n$ ” \rightarrow “ $\mathbf{x}_1, \dots, \mathbf{x}_n$ ”.
- p.269. 5th line of Section 15.2. “(published 2002)” \rightarrow “(2002)”.
- p.272. Step (5)(a) of the algorithm. $\begin{bmatrix} \boldsymbol{\beta}^{(k+1)} \\ \mathbf{b} \end{bmatrix} \rightarrow \begin{bmatrix} \boldsymbol{\beta}^{(k+1)} \\ \mathbf{u} \end{bmatrix}$.
- p.277. 7th line. “The Bayes” \rightarrow “Bayes”.
- p.279. Equation (16.2) should read

$$P\{\boldsymbol{\theta} \in \mathcal{S}(\mathcal{D}) | \boldsymbol{\theta}\} = 1 - \alpha \quad \text{for all } \boldsymbol{\theta}.$$

and equation (16.3) should read

$$P\{\boldsymbol{\theta} \in \mathcal{S}(\mathcal{D}) | \mathcal{D}\} = 1 - \alpha \quad \text{for all } \mathcal{D}.$$

- p.279. line 6. “parameter parameter” \rightarrow “parameter”.
- p.283. 1st line after Figure 16.1. “are used” \rightarrow “is used”.
- p.285. line 5. “but all four autocorrelations” \rightarrow “but the absolute value of all four autocorrelations”.
- p.290. line 1. “Chib and Greenberg 1995” \rightarrow “Albert and Chib 1993; Chib and Greenberg 1995”.
- p.297. line -3 . “and and” \rightarrow “and”.
- p.298. line -3 . “is defined” \rightarrow “is as defined”.
- p.299. line 7 of Section 17.5.2. “increase” \rightarrow “increases”.
- p.302. line -17 . “compare posterior” \rightarrow “compare the posterior”.
- p.303. Figure 17.5 caption. “Monte Carlo” \rightarrow “the Monte Carlo”.
- p.308. Section 18.2. “carciogenicity” \rightarrow “carcinogenicity”.
- p.308. line -4 . “sound” \rightarrow “Sound”.
- p.314. line -5 . “fit tensor” \rightarrow “fit a tensor”.
- p.316. line -5 . “correlation function” \rightarrow “autocorrelation function”.
- p.320. line -12 . “basis model” \rightarrow “basic model”.
- p.324. line 9. “of the methods” \rightarrow “the methods”.
- p.328. Section A.2.6. “semipositive definite” \rightarrow “positive semidefinite”.
- p.330. line 11. “ $\partial f(\mathbf{x}) \partial x_i$ ” \rightarrow “ $\partial f(\mathbf{x}) / \partial x_i$ ”.
- p.339 Equation (B.2). “`x <- $radiation`” \rightarrow “`x <- air$radiation`”.
- p.345. In the chunk of `Matlab` code near the bottom of the page the line of code

```
if smooth_spline_penalty == 1 ;
```

should be added after

```
D = diag(id) ;
```

- p.384. Immediately after "MASE, 128" should appear a new line with "Matérn family, 246".
- p.351. Section B.1.2.2. "general ridge regression" → "generalized ridge regression".
- p.355. In the S-PLUS code near the center of the page, the following lines of code should be added immediately after the line that reads `K.3 <- length(knots.3)`:

```
Z.1 <- outer(x1,knots.1,"-")
```

```
Z.1 <- Z.1*(Z.1>0)
```

```
Z.2 <- outer(x2,knots.2,"-")
```

```
Z.2 <- Z.2*(Z.2>0)
```

```
Z.3 <- outer(x3,knots.3,"-")
```

```
Z.3 <- Z.3*(Z.3>0)
```

```
Z <- cbind(Z.1,Z.2,Z.3)
```

- p.365. The full reference for the paper by French and Wand is:

French, J.L. and Wand, M.P. (2004). Generalized additive models for cancer mapping with incomplete covariates. *Biostatistics*, **5**, 177–191.

- p.370. Parise et al. (2001). The paper is in *JRSS-C, Applied Statistics*. The order of the authors is Parise, Wand, Ruppert and Ryan.

Acknowledgements

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