Bayesian Statistics:

An Introduction

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Third Edition

A member of the Hodder Headline Group
LONDON
Distributed in the United States of America by
Oxford University Press Inc., New York

Appendix E

Misprints and Errors in Third Edition

1. Page viii, title for section 5.3. For "equal (Behrens" read "unequal (Behrens".

2. Page xiii (footnote to Preface). For "Bellhouse (2003) and Dale (1991)" read "Bellhouse (2004) and Dale (1999)".

3. Page 10, line 14. For "is taken as $\frac{1}{2}$, which is scarcely in accord with a presumption of innocence." read "happens to equal $\mathsf{P}(E)$, which will only rarely be the case."

4. Page 19, line 16 from bottom. For "function $\text{Be}(k+1, n-k+1)$" read "function $\text{B}(k+1, n-k+1)$".

5. Page 34, line 7 from bottom. For

$$p(x) = (2\pi\phi)^{\frac{1}{2}} \exp\{-\tfrac{1}{2}(x-\theta)^2/\phi\}.$$

read

$$p(x) = (2\pi\phi)^{-\frac{1}{2}} \exp\{-\tfrac{1}{2}(x-\theta)^2/\phi\}.$$

6. Page 35, line 7. For

$$p(\theta|x) = p(\theta)p(x|\theta)$$

read

$$p(\theta|x) \propto p(\theta)p(x|\theta)$$

7. Page 50, line 12. For

$$p(\phi) = p(\psi)\,|\mathrm{d}\psi/\,\mathrm{d}\phi| \propto \mathrm{d}\,\log\psi/\,\mathrm{d}\phi$$

read

$$p(\phi) = p(\psi)\,|\mathrm{d}\psi/\,\mathrm{d}\phi| \propto \mathrm{d}\,\log\phi/\,\mathrm{d}\phi$$

8. Page 51, lines 15–16. For “the variance was in fact unkown, but treat it as if the variance were known” read “the mean was in fact unknown, but treat it *as if* the mean were known”.

9. Page 60, line 11 from bottom. For “with θ known” read “with ϕ known”.

10. Page 60, last line. For

$$p(x|\pi) = \binom{n}{x}(1-\pi)^n \exp[-x\log\pi/(1-\pi)].$$

read

$$p(x|\pi) = \binom{n}{x}(1-\pi)^n \exp[x\log\pi/(1-\pi)].$$

11. Page 63, line 15. For

$$p(\theta|\boldsymbol{x}) = p(\theta,\phi|\boldsymbol{x})\,\mathrm{d}\phi$$

read

$$p(\theta|\boldsymbol{x}) = \int p(\theta,\phi|\boldsymbol{x})\,\mathrm{d}\phi$$

12. Page 79, line 5. For “$\pi =$” read “$p(\pi) =$”.

13. Page 83, line 7. For “$-\frac{\mathrm{d}}{\mathrm{d}\theta^2}1$” read “$-\frac{\mathrm{d}^2}{\mathrm{d}\theta^2}1$”.

14. Page 83, line 12 from bottom. For “where $\boldsymbol{x}$ is any one of the x_i” read “where x is any one of the x_i”.

15. Page 87, line 11 from bottom. For

$$p(\lambda|x) \propto \lambda^{(\nu+2T)/2-1}\exp\{-\tfrac{1}{2}(S_0+2n)\lambda\}$$

read

$$p(\lambda|\boldsymbol{x}) \propto \lambda^{(\nu+2T)/2-1}\exp\{-\tfrac{1}{2}(S_0+2n)\lambda\}$$

16. Page 90, lines 12 and 5 from bottom. For

$$\propto y^{-\gamma-1} I_{\{\xi,\infty\}}(y)$$

read

$$\propto y^{-\gamma-1} I_{(\xi,\infty)}(y)$$

17. Page 98, line 10 from bottom. For

$$\int_{da}^{(d+1)a} \theta/(\theta \log_{\mathrm{e}} 10) = \log_{\mathrm{e}}(1+d^{-1})/\log_{\mathrm{e}} 10 = \log_{10}(1+d^{-1}).$$

read

$$\int_{da}^{(d+1)a} \mathrm{d}\theta/(\theta \log_{\mathrm{e}} 10) = \log_{\mathrm{e}}(1+d^{-1})/\log_{\mathrm{e}} 10 = \log_{10}(1+d^{-1}).$$

18. Page 100, line 14. For "for large z" read "for large κ".

19. Page 100, line 15. For "$(2\pi)^{-1/2}\exp(z)$" read "$(2\pi\kappa)^{-1/2}\exp(\kappa)$".

20. Page 105, line 6 from bottom. For "$S \sim \chi_n^2$" read "$S \sim \phi\chi_n^2$".

21. Page 106, line 6 from bottom. For

$$L(\theta) = \text{constant} - \log\{1 + (x_i - \theta)^2\}$$

read

$$L(\theta) = \text{constant} - \sum \log\{1 + (x_i - \theta)^2\}$$

22. Page 108, line 18. Element in top right corner of matrix on right hand side should be $-n(\overline{x} - \theta)/\phi^2$ in agreement with the element in the bottom left corner.

23. Page 110, line 14. For "Be$(k + 1/n,\, k - x + 1/n)$" read "Be$(x + 1/n,\, k - x + 1/n)$".

24. Page 112, line 8. For "Since $M - \theta - \frac{1}{2}$ is" read "Since $M - (\theta - \frac{1}{2})$ is'.'

25. Page 122, line 7 from bottom. For $\frac{p_0}{1-p_1}$ read $\frac{p_0}{1-p_0}$.

26. Page 126, line 15. For

$$p_1(\boldsymbol{x}) = \pi_1 \int \rho_1(\theta) p(\boldsymbol{x}|\theta)\,\mathrm{d}\theta$$

read

$$p_1(\boldsymbol{x}) = \int \rho_1(\theta) p(\boldsymbol{x}|\theta)\,\mathrm{d}\theta$$

27. Page 143, line 11. For

$$t = \frac{\delta - (\overline{x} - \overline{y})}{s(m^{-1} + n^{-1})}$$

read

$$t = \frac{\delta - (\overline{x} - \overline{y})}{s(m^{-1} + n^{-1})^{1/2}}$$

28. Page 167, line 13 from bottom. For

$$p(\alpha, \beta, \phi \,|\, \boldsymbol{x}, \boldsymbol{y}) \propto p(\alpha, \beta, \phi)\, p(\boldsymbol{y} \,|\, \boldsymbol{x}, \phi, \alpha, \beta, \phi)$$

read

$$p(\alpha, \beta, \phi \,|\, \boldsymbol{x}, \boldsymbol{y}) \propto p(\alpha, \beta, \phi)\, p(\boldsymbol{y} \,|\, \boldsymbol{x}, \alpha, \beta, \phi)$$

29. Page 176, line 2 from bottom. For "$F_{i-1,}$" read "$F_{i-1,\nu}$".

30. Page 183, line 1. On line 1 "for all i" should read "for all j" and vice-versa on line 3.

31. Page 183, line 4 from bottom. For

$$p(\lambda, \boldsymbol{\tau}, \boldsymbol{\beta}, \boldsymbol{\kappa}, \phi \,|\, \boldsymbol{x}) \propto \phi^{-N/2-1} \exp[-\tfrac{1}{2}[[S_t(\boldsymbol{\tau}) + S_b(\boldsymbol{\beta}) + S_{tb}(\boldsymbol{\kappa}) + S_e]/\phi]$$

read

$$p(\lambda, \boldsymbol{\tau}, \boldsymbol{\beta}, \boldsymbol{\kappa}, \phi \,|\, \boldsymbol{x}) \propto \phi^{-(N+1)/2-1} \exp[-\tfrac{1}{2}[[S_t(\boldsymbol{\tau}) + S_b(\boldsymbol{\beta}) + S_{tb}(\boldsymbol{\kappa}) + S_e]/\phi]$$

32. Page 185, line 5 from bottom . For $\boldsymbol{\beta} = (\alpha, \beta)^{\mathrm{T}}$ read $\boldsymbol{\eta} = (\alpha, \beta)^{\mathrm{T}}$.

33. Page 188, line 14 from bottom. For

$$\frac{\nu(\alpha - \overline{y})^2}{s^s} \qquad \text{read} \qquad \frac{\nu(\alpha - \overline{y})^2}{s^2}$$

34. Page 189, question 6. For "special form $p(\rho) \propto (1-\rho^2)^k$" read "special form $p(\rho) \propto (1-\rho^2)^{k/2}$".

35. Page 222, line 16 from bottom. For "$\mu \sim (\lambda, \psi)$" read "$\mu \sim \mathrm{N}(\lambda, \psi)$".

36. Page 224, line 3. For "μ_{ij}" read "θ_{ij}".

37. Page 226, line 1. For "estimates well not" read "estimates will not".

38. Page 229, line 9. For

$$r = 16, \quad \overline{Y} = 0.2564, \quad \overline{X} = 7.221, \quad S = 18.96$$

read

$$r = 18, \quad \overline{Y} = 0.2654, \quad \overline{X} = 7.221, \quad S = 18.96$$

39. Page 229, line 13 from bottom. For "We suppose that the ith player had m_i hits and was at bat T_i times" read "We suppose that the ith player had T_i hits and was at bat m_i times".

40. Page 249, lines 2 and 3. For $p(\boldsymbol{y} \,|\, \eta^{(t+1)}, \boldsymbol{y})\,\mathrm{d}\boldsymbol{y}$ read $p(\boldsymbol{y} \,|\, \eta^{(t+1)}, \boldsymbol{x})\,\mathrm{d}\boldsymbol{y}$ (twice).

41. Page 255, line 9 from bottom. For

$$\psi \sim \chi^2_\nu \quad \text{and} \quad \theta \,|\, \psi \sim \mathrm{N}(\mu, \psi/s)$$

read

$$\psi \sim \chi^2_\nu \quad \text{and} \quad \theta \,|\, \psi \sim \mathrm{N}(\mu, s^2\psi)$$

42. Page 255, bottom line should read "the original data $\boldsymbol{x}$ augmented by a single scalar z (as in the linkage example). The algorithm"

43. Page 256, line 20 from bottom. For ''marginal distribution of z" read "marginal distribution of y".

44. Page 264, line 5 from bottom. For

$$\mathcal{V}_i = \{1/\psi + n_i/\psi\}^{-1} \quad \text{and} \quad \widehat{\theta}_i = \mathcal{V}_i \{\mu/\psi + n_i x_{i\bullet}/\psi\}.$$

read

$$\mathcal{V}_i = \{1/\psi + n_i/\phi\}^{-1} \quad \text{and} \quad \widehat{\theta}_i = \mathcal{V}_i \{\mu/\psi + n_i x_{i\bullet}/\phi\}.$$

45. Page 271, line 18 from bottom. For

$$\alpha(\boldsymbol{\phi}|\boldsymbol{\theta}) = \min\left\{\frac{\exp[-\frac{1}{2}(\boldsymbol{\phi}-\boldsymbol{\mu})^{\mathrm{T}}\boldsymbol{\Sigma}^{-1}(\boldsymbol{\phi}-\boldsymbol{\mu})]}{\exp[-\frac{1}{2}(\boldsymbol{\theta}-\boldsymbol{\mu})^{\mathrm{T}}\boldsymbol{\Sigma}^{-1}(\boldsymbol{\theta}-\boldsymbol{\mu})]}\right\}.$$

read

$$\alpha(\boldsymbol{\phi}|\boldsymbol{\theta}) = \min\left\{\frac{\exp[-\frac{1}{2}(\boldsymbol{\phi}-\boldsymbol{\mu})^{\mathrm{T}}\boldsymbol{\Sigma}^{-1}(\boldsymbol{\phi}-\boldsymbol{\mu})]}{\exp[-\frac{1}{2}(\boldsymbol{\theta}-\boldsymbol{\mu})^{\mathrm{T}}\boldsymbol{\Sigma}^{-1}(\boldsymbol{\theta}-\boldsymbol{\mu})]}\,,\,1\right\}.$$

46. Page 282. In question 9, for “Section 15” read “Section 9.4”.

47. Page 285, line 7 from bottom. For

$$F(x) = \mathsf{P}(X \leqslant \tfrac{1}{2}) = \tfrac{1}{2}.$$

read

$$F(x) = \mathsf{P}(X \leqslant m) = \tfrac{1}{2}.$$

48. Page 289, line 2. For “$p(X)$” read “$p(Y)$”.

49. Page 289, line 6 from bottom. For “$Y \sim S^{\frac{1}{2}}\chi_{\nu}^{-2}$” read “$Y \sim S^{\frac{1}{2}}\chi_{\nu}^{-1}$”.

50. Pages 332–333. The more program for Behrens’ distribution (due to Jacob Colvin) previously given as in place of this program is no longer recommended. It can, however, still be found in the file

`http://www-users.york.ac.uk/~pml1/bayes/rprogs/hdr_colvin.txt`

51. Page 337. In references, change entry to
Bellhouse, D. R.,‘The Reverend Thomas Bayes, FRS: A biography to celebrate the tercentenary of his birth’ (with discussion), *Statistical Science*, **19** (2004), 3–43.

52. Page 339. In references, change entry to
Dale, A., *A History of Inverse Probability from Thomas Bayes to Karl Pearson*, Berlin: Springer-Verlag (1999) [1st edn (1991)].

53. Page 343. In reference, change entry to
Goldstein, M., and Wooff, D., *Bayes Linear Statistics: Theory and Methods*, Chichester, Wiley 2007.

Revised 13 December 2011.