

**Biostatistics, A Bayesian Introduction**  
**Consequential Errata for the First Printing**

*Check the bottom of the copyright page. If it reads 10 9 8 7 6 5 4 3 2 1 your copy is a first printing and you should make the following corrections.*

**Chapter 1**

Page 2, 5<sup>th</sup> line after Figure 1, change 50,296 to 50,295

**Chapter 2**

Page 10, Figure 2.1, the second zero in the top row should be double zero

Page 11, line -10, change 0.215 to 0.2105

Page 20, Table 2.3, the probability of S1 should be 0.0263

**Chapter 3**

Page 25, line 2 of Section 3.2, casino probabilities are in Chapter 2, not 3

Page 25, line -12, 2048/4040 equals 0.5069 or 50.69%

Page 31, line -9, change "AS" to "AH"

Page 34, line 8, change "sells shirts" to "sells"

**Chapter 4**

Page 50, in Figure 4.2, the leaf corresponding to the stem 2 for females should be 985554332200

Page 50, line -10, the value "19 seconds" should be replaced by "0.19 seconds"

Page 50, line -8, the maximum value for females is 0.48 seconds, not 0.84 seconds

Page 56, line -1, the 0.500 should be 0.450 (i.e.,  $0.225 + 3.0 \times 0.075 = 0.450$ )

**Chapter 5**

Page 66, the first term in Equation (5.1) is incorrect, the correct equation is,

$$P(M_j|D) = \frac{P(M_j \cap D)}{P(D)} = \frac{P(D|M_j) \cdot P(M_j)}{\sum_{\text{all models}} P(D|M_i) \cdot P(M_i)}$$

Page 67, line -5,  $P(D | M_1)$  is the probability of drawing two white marbles from a cup containing four white and one black marbles (not two black marbles); i.e., change "two black" to "one black"

Page 80, line -1, the posterior probability for model M.001 is 1.31079E-09

Page 85, in the last line of the caption for Figure 5.18, change "0093" to "0.093"

Page 86, Exercise 5.3. the second occurrence of "6.8 billion" should be "5 billion". I.e., the next to the last sentence should be:

"Comment on the prosecutor's apparent choice of 1 in 5 billion as a worst case prior."

**Chapter 6**

Page 90, 4 lines above Figure 6.2, change "Fig. 6.1" to "Fig. 6.2"

Page 99, in the caption for Figure 6.11, the value for  $\sigma$  should be 0.0686, not 0.0684. In addition, after "using" insert "Equation (6.7)"

Page 100, last line, change "beta(1.5,1.5)" to "beta(1.5,5)"

Page 105, line 12 change "beta(4.8,5)" to "beta(3.4,4.6)"

**Chapter 7**

Page 112, line -16, change "{T.37, C.27}" to "{T.39, C.19}"

Page 113, Table 7.2 change "Not shown: 18" to "Not shown: 16"  
and change "Not shown: 56" to "Not shown: 54"

Page 115 and 117, equations (7.4), (7.5), and (7.7) change "0.3112" to "0.3113"

Page 123, line 20, change "196/186 = 1.054" to "196/189 = 1.037", and change "5%" to "4%"

Page 125, line 1, the lower endpoint of the CI for the RR should be 0.67, not 0.68

Page 125, line 3, change 32% to 33%

Page 125, line 13 and line 14, change 0.4359 to 0.4364 and change 0.5641 to 0.5636

Page 126, line 16, change 1.43 to 1.42

Page 131, Figure 7.5,

in the first block, change " $x_B = 73$ " to " $x_B = 35$ " and change " $x_C = 78$ " to " $x_C = 37$ "  
in the third block, under the second square root sign, change 1297 to 2397

Page 132, line -7, the expression for  $\sigma$  should be,

$$\sigma = \frac{\ln(\text{UCL/LCL})}{2 \cdot 1.96} = \frac{\ln(7.7/1.0)}{3.92} = 0.52$$

Page 138: in Exercises 7.10 and 7.11, change "Analyze the data in Exercise 7.7" to "Analyze the data in Exercise 7.9"

## Chapter 8

Page 142, lines 10-11, change "34 chips" to "31 chips"

Page 149, equation (8.5), change "6.40" to "6.50" in the third denominator

Page 149, 4 lines below equation (8.5), change "*significantly significant*" to "*statistically significant*"

Page 149, line -13, row 38 of Table A.2 is on page 303, not 30.

Page 150, line -8, change "Equation (7.11)" to "Equation (7.10)"

Page 150, line -4, change "Fig. 8.5" to "Fig. 8.6"

Page 151, line -11, change "between 0.01 and 0.00" to "between 0.005 and 0.000"

Page 154, 4 lines above Table 8.2, the median is actually -1.17 and not -1.18

Page 154, 4 lines above Table 8.2,  $\ln(0.03) = 3:51$ , not 3.58

Page 158, line 6, change -2 to -0.5

Page 159: The second line of equation (8.18) should be,  $y = \ln(x + c)$

Page 167, lower block of Table 8.7 and on page 168, line 2, the lower endpoint of the 95% CI should be -0.0004 and not -0.0044

Page 167, line -2, the actual value for  $\mu = \bar{d}$  is 0.0310 and not 0.310

Page 168, line 2, change 0.310 to 0.0310 and 0.139 to 0.0139

Page 168, in Table 8.8, panel B,

$\bar{x}_p$  should be 20.13, not 19.21

$\bar{x}_D$  should be 11.31, not 11.19

Page 178, in Table 8.8, panel C, change 8.020 to 8.82

Page 169, line 13, the 97.5th percentile of the  $t(18)$  distribution is 2.10, not 2.12

Page 169, line 14, the 95% confidence interval should be  
 $8.82 \pm 2.10 \times 0.559$  or 7.65 to 9.99

Page 172, lines 8 and 9, change "Type" to "DevType" in both lines.

Page 174, in Figure 8.14, the number of lines not shown should be 35, not 34

Page 174: in the SAS program in Figure 8.14

a space is required between "INPUT" and "semester" in this line:

```
INPUT semester $ initials $ gender $ age distance time;
```

In addition, each of the data lines requires a space between the semester code and the student's initials:

```
Fall AEI M 24 11.0 0.153
```

```
--- etc ---
```

## Chapter 9

Page 182, in the legend to Figure 9.2, insert a space between “years” and “(7)” and insert “(8)” at the end of the legend for 5 to 7.11 years.

Page 183, in the 2<sup>nd</sup> line below Figure 9.3,

change “ $\hat{y}_x = 68.31 - 0.97 \cdot x$ ” to “ $\hat{y}_x = 57.8 - 8.03 \cdot x$ ”

Page 183, in the 4<sup>th</sup> line below Figure 9.3,

change “ $68.31 - 0.97 \times 20 = 48.9$ ” to “ $57.8 - 8.03 \times 3.00 = 33.7$ , because  $x = \ln(20) = 3.00$ ”

Page 186, line 9, change  $e$  to  $\hat{e}$

Page 186, line -1, change “ $s_y = 17.71$ ” to “ $s_y = 19.77$ ”

Page 187, 1<sup>st</sup> line after equation (9.13), change “ $r = 0.463$ ” to “ $r = -0.463$ ”

Page 187, line -10, change 0.19 to 0.21 and 19% to 21%

Page 187, line -7, change 19% to 21%

Page 188, at the end of line 9, change 48 to 46

Page 188, second line below equation (9.15),

change "5 years" to "1.5 years"

change " $x_{\text{new}} = 5$ " to " $x_{\text{new}} = \ln(1.5) = 0.41$ "

Page 188, replace Equation (9.6) with,

$$\mu = 57.8 - 8.03 \times 0.41 = 54.5$$

$$\sigma = 17.7 \times \sqrt{1 + \frac{1}{48} + \frac{(0.41 - 2.17)^2}{60.99}} = 18.3$$

Page 188, 4<sup>th</sup> line below Equation (9.16), change “ $(50 - 63.44)/20.67 = -0.65$ ”

to “ $(50 - 54.5)/18.3 = -0.25$ ”

Page 188, 5<sup>th</sup> line below Equation (9.16), change 0.74 to 0.60

Page 188, 6<sup>th</sup> and 7<sup>th</sup> lines below Equation (9.16), change “three chances in four, or 3 to 1 odds”

to “three chances in five, or 3 to 2 odds”

Page 190, 2<sup>nd</sup> line below equation (9.17), change “Fig. 9.4 on page 184” to “Fig. 9.5 on page 185”

Page 190, Figure 9.6 should have a legend indicating that black circles represent females and open circles represent males.

Page 191, in Table 9.2 the adjusted mean for males should be \$36,411, not \$36,436

in addition, change the word “nurses” to “employees” in the label for the vertical dotted line.

Page 192, at the end of line 5, the reference should be to Fig. 9.7, not to Fig. 9.2.

Page 193, Table 9.3, the label for Boolean variable “F” should be “Female” and the label for variable “M” should be “Male”

Page 194, in equation (9.24), change “ $(1-H-B)$ ” to “ $(1-H-G)$ ”

Page 198, in Table 9.6, the individual in the 8th position has a BS degree, consequently the value for variable  $x_3$  should be 0, not 1

Page 201, line 5, change “SOLUTIONS” TO “SOLUTION”

Page 201, lines 12 and 13 (not counting lines in the table),  
change “ $\mu = 47.43$ ” to “ $\mu = 1618.7$ ” and  
change “ $\sigma = 32$ ” to “ $\sigma = 47.53$ ”

Page 202, line 20, change “MODEL Sa1 = Gen Yrs / NOINT”,  
to “MODEL Sa1 = Gen Yrs\*Gen / NOINT”

Page 203, at the end of the line just above the “Solution for Fixed Effects” table, delete “is” and insert “was the source of Equation (9.19).”

Page 204, the SAS output at the bottom of the page is incorrect,  
in the “Alpha” column change “0.1” to “0.05” (three changes),  
and in columns “Lower” and “Upper” make these six changes:

change 35382 35786 to 35341 35827  
change 36005 36816 to 35923 36898  
change -1279.69 -373.49 to -1279.69 -373.49

Page 205, line 6, change “Section 8.6.3” to “Section 8.5.2”

Page 206, at the beginning of line -3, change 0.639 to 0.0639

Page 207, Exercise 9.1, change “FDA” to “NIH”

Page 207, Exercise 9.2, change “data of Exercise 8.6” to “data of Exercise 8.7”

### Chapter 10

Page 211, line 15, change “6.02” to “-6.01”

Page 212: Table 10.2 is missing a column. The correct version is,

**Table 10.2 Logits, Odds, and Probabilities via Design Variables**

Explanatory Vars			Design Variables				logits, odds, rates, ratios				
Cigs/ Day	Sex	Age	$X_1$	$X_2$	$X_3$	$X_4$	Logit	Odds	Odds Ratio	Rate $P_x$	Rel. Risk
0	M	45	1	0	1	45	-9.01	0.000122	}20.1	0.000122	}20.1
20	M	45	1	20	1	45	-6.01	0.002454		0.002448	
20	F	25	1	20	0	25	-6.15	0.002133	}1.1	0.002129	}1.1
20	M	25	1	20	1	25	-6.05	0.002358		0.002352	
$\hat{\beta}$ values:			-9.2	0.15	0.10	0.002					

Page 212, in equation (10.4), change “ $\exp(\beta_2 \cdot \Delta X_2)$ ” to “ $\exp(\hat{\beta}_2 \cdot \Delta X_2)$ ”

Page 213, line 7, change “ $\exp(\beta_3)$ ” to “ $\exp(\hat{\beta}_3)$ ”

Page 214, line -9 and line -10, change “thickness > 3.30 mm” to “thickness > 3.60 mm”

Page 214, line -3, change “ $\exp(\beta_5)$ ” to “ $\exp(\hat{\beta}_5)$ ”

Page 216, line 8 the reference should be to equation (7.14) on page 126, not equation (7.15).

Page 216, equation (10.10), change denominator 18.4 to 18.5

Page 217, in Table 10.6, footnote b, change “Equation (10.6)” to “Equation (10.3)”

Page 219: The third line of the SAS program in Figure 10.1 is missing a right parenthesis. It should be,  
`CLASS Def(REF="NB") Vic(REF="NW") / PARAM=REF;`

Page 220: The third line from the end of the SAS program in Figure 10.2 is missing the keyword "CLM". The line should be,  
`SCORE DATA=Request OUT=Predict CLM;`

Page 220, line 5, change “Equations (10.5) and (10.6)” to “Equations (10.6) and (10.7)”

Page 220, line 8, change “Fig. 10.3” to “Fig. 10.2”

### **Chapter 11**

Page 225, Figure 11.1, and page 226, Figure 11.2, change “Wilkins” to “Zierler” and “Zierler” to “Wilkins”

Page 226, Figure 11.2, change the OR for Alvanja from 1.67 to 1.69

Page 227, line 2 of equation 2, change “LCL/UCL” to “UCL/LCL”

Page 227, 7<sup>th</sup> line after Equation (11.1), change “top panel of Fig. 8.11” to “top panel of Fig. 8.8”

Page 233, line -14, change “tail area=0.204” to “tail area=0.0204” and,  
in line -13, change “tail area=0.266” to “tail area=0.0266”

Page 234, line 5, change “Table 11.5” to “Table 11.6”

Page 235, just above the caption to Table 11.6 insert at the end of the WinBUGS program:  
`Initial Values list(tau.lambda=1)`

Page 237, in Figure 11.5, the Data box for Hospital L is incorrect, the correct values are  
 $n_{12} = 360$ , and  $x_{12} = 24$ .

Page 239, in lines 12 and 20, change 0.048 to 0.0497

Page 243, line 2, change “Fig. 11.4” to “Fig. 11.6”

### **Chapter 12**

Page 246, in lines 1 and 2 after Table 12.1, in two places change 3401 to 3410

Page 250, in Table 12.3, the first column of the 8th line should be “11-23”, not “22-23”,  
the second column of row “152-157” should be 4, not 3, and  
the second column of row “157-229” should be 3, not 2

Page 255, in the 1<sup>st</sup> line after equation (12.8), change “BetaTailAreaTable.xls” to “BetaTailArea.xls”

Page 255, line 14 of Section 12.3.3, change “Equation (7.14) on page 126” to “Equation (7.13) on page 125”

129. On page 256, last line in the bottom panel of Figure 12.4, in the expression for  $P(RR > 1)$   
change “ $P(Z > -2.31) = 0.989$ ” to “ $P(Z > -2.07) = 0.981$ ”

Page 259, Figure 12.6, in each data line insert one or more blank spaces between the value for Time and the value for Censored; i.e., change “1280” to “128 0”, “1391” to “139 1”, “2421” to “242 1”, and both instances of “2521” to “252 1”

Page 259, line -1, change “50 months” to “38 months”

Page 261, (12.9) change “ $h_x(t) = h_0(t) \cdot \exp(\beta_1 \cdot x_1 + \beta_1 \cdot x_2)$ ” to “ $h_x(t) = h_0(t) \cdot \exp(\beta_1 \cdot x_1 + \beta_2 \cdot x_2)$ ”

Page 263, line 11, change “Equation (12.2)” to “Equation (12.12)”

Page 264, line 16, change “ $\text{sum} \geq 8$ ” to “ $\text{sum} < 8$ ”

On page 265, line 7, page 267, line 6, and page 267, line 17-18, change “Equation (7.15) on page 128” to “Equation (7.14) on page 126”

Page 265, in the footnote d for Table 12.8, after “baseline category” insert “(all design variables = 0)”

Page 266, in the last line of Table 12.9, the values for the hazard ratios are not correct,  
change 13.15 to 13.07 and change 32.50 to 32.46

Page 267, line -7, change “PSR” to “PSA”

Page 269, lines 2 and 3 after Figure 12.8, change “Equation (7.11) on page 122” to “Equation (7.10) on page 120”

Page 269, line -4 (the last data line), change “37 F” to “21 F”

Page 271, line 7, change “Equations (12.8) and (12.17)” to “Equations (12.9) and (12.17)”

Page 271, line -2, change “Table 12.8” to “Fig. 12.8”

Page 273, line 11, change 3.11 to 3.85

Page 275, in Table 12.12, the age range for the second line in the table should be “1-2” and not “1-1.”

Page 276, Exercise 12.2,  
in line 1, change “Table 12.4” to “Table 12.5”, and  
in part (a), delete the word “log”

Page 276, Exercise 12.3, in line 3 of part (b), change “[ $1 - S_{1-3}(10)$ ]” to “[ $1 - S_0(10)$ ]”

Page 276, in line 2 of Exercise 12.4, after “survival time” insert “in the 4+ nodes group”

### **Chapter 13**

Page 280, line 8 (counting the section title), change “(10% cure rate), drug B” to “(20% cure rate); the overall cure rate<sup>8</sup> for this drug is 27%. Drug B”

Page 280, line 8-9 change “(40% cure rate for R, 60% cure rate for F)” to “(40% cure rate for R, 60% cure rate for F, overall cure rate 58%)”

Page 280, bottom, renumber footnote 8 to 9 and insert new footnote 8:

$$8. P(\text{Cure}) = P(\text{Cure}|R) \times P(R) + P(\text{Cure}|F) \times P(F) = 0.9 \times 0.1 + 0.2 \times 0.9 = 0.27$$

Page 289, line -9, change 0.611 to 0.126

Page 291, in Table 3.3, the second line under “n” on the left, change 102-120 to 103-120.

Page 293, 5<sup>th</sup> line below equation (13.4), change “n=1323” to “n=1302”

Page 294, Figure 13.11,  
in row “n” and in the figure caption, change 1323 to 1302  
in row “E(Width),” change 0.735 to 0.740

Page 294, Figure 13.12, row “n”  
in the left panel, change 346 to 344 and in the right panel, change 276 to 274

Page 294, 4<sup>th</sup> line after Figure 13.11, change 0.73 to 0.74

Page 295, line 12 (counting the equations),  
change “p0” to “p<sub>0</sub>” and change “235” to “233”

Page 297, in Exercise 13.8, change “n = 281” to “n = 274”

### **Appendix B**

The WinBUGS screen shots are legible but somewhat fuzzy. There is a hyperlink to a clearer version on the Textbook website.