Date: 01/05/12   **UPDATED 01/22/2012**

Authors:	**John Kruschke**
Title:	**Doing Bayesian Data Analysis**
ISBN:	**978-0-12-381485-2** **Errata for 1st Printing**

Page No.	Area/Element	Correction
30	Line 7	The sentence on lines 4-7, regarding the snowfall example, is technically not correct because there can't be 3-6 inches of snow without 1-3 inches of snow also having happened. Please replace it with the following sentence: "As another example, if you believe there is a 60% chance that cell phones are 0 to <3 inches wide and a 20% chance that they are 3 to <6 inches wide, then you should believe that there is an 80% (= 60% + 20%) chance that they are 0 to <6 inches wide."
53	Immediately after Eqn. 4.2	"In Equation 4.2, the γ ..." should be "In Equation 4.2, the y ...". That is, the Greek letter gamma should be a math-font y.
86	Figure 5.2	The lower-right panel should have its y-axis labeled $p(\theta|D)$, not $p(\theta)$. This was correct in the original, but mysteriously altered in production.
94	Code line 44	Replace code line 44 with this: hpdLim = HDIofICDF(qbeta , shape1=postShape[1] , shape2=postShape[2] , credMass=credMass) In other words, before the final parenthesis, insert ", credMass=credMass" (The online program has been corrected.)
107	Figure 6.4, caption	In the caption, delete "more" from the first sentence, so it reads: "The 95% HDI of the posterior is *split* across two distinct subintervals."
111	Code line 91	Replace code line 91 with this: HDIinfo = HDIofGrid(pThetaGivenData , credMass=credib) In other words, before the final parenthesis, insert ", credMass=credib" (The online program has been corrected.)
151	Exercise 7.3, Part (C), 11 lines from bottom of page	Replace the word "likelihood", that is hyphenated across lines, with the word "data". Also change the following word "functions" to "function". Thus, the clause "You'll need to alter the definitions of the likelihood and prior functions in the R script;" should be "You'll need to alter the definitions of the data and prior function in the R script;"
197	Figure 9.2, caption, next to last line.	Change "(see small plots of $p(\mu|\theta)$)" to "(see small plots of $p(\theta|\mu)$)".
199	Figure 9.3, caption, next to last line.	Change "(see small plots of $p(\mu|\theta)$)" to "(see small plots of $p(\theta|\mu)$)".
219	line 6	"σ" should be "κ". That is, the Greek letter sigma should be a Greek letter kappa.
226	Figure 9.17.	In the upper right of the diagram, the arrow pointing to r_κ should come from $\mu_\gamma/\sigma_\gamma^2$, not $\mu_\gamma^2/\sigma_\gamma^2$. In other words, delete the power "2" from the upper-right μ_γ. This was correct in the original figure but was mysteriously changed in production.

| Page No.	Area/Element	Correction
237	Figure 9.18	In the upper-middle histogram, the dark line marking the HDI is misplaced. It was correct in the original, but was mysteriously changed in production.
290	Figure 11.7, caption	The last sentence of the caption should say, "The domain of N ... is integers from z to ∞." That is, change only the first occurrence of "z" in that sentence to "N".
302	line 15	"if when null" should be changed to "if the null"
309	line 6 of final paragraph	"is more believable that other" should be "is more believable than other". That is, change "that" to "than".
346	Exercise 13.2, Part (A), 2nd line	Change "85 flips" to "79 flips".
347	Line 5	Change "power of 0.8" to "power of 0.9". That is, 0.8 should be 0.9.
365	Figure 14.2	In the upper-right graph, the title equation should be $y = 0 + \mathbf{0}x_1 + 2x_2$, not $y = 0 + \mathbf{1}x_1 + 2x_2$. That is, the number in front of x_1 should be 0 not 1. The original of this figure was correct, but it was altered mysteriously in production.
391	Figure 15.1	In the upper-left graph, there is a missing negative sign: "$p(D\|\mu,\sigma)$=3.85e 08" should be "$p(D\|\mu,\sigma)$=3.85e-08". That is, there should be a negative sign between e and 08. The original of the figure was correct, but it was mysteriously altered in production.
431	Figure 16.8	The lower right panel of Figure 16.8 is wrong. The corrected version is appended after this table.

442	first three lines	Replace the three code lines 128-130 with the following three lines:
		``
		yPostPred[,chainIdx] = (rt(length(xPostPred) , df=tdfSamp[chainIdx])
		                        * sigma[chainIdx]
		                        + b0[chainIdx] + b1[chainIdx] * xPostPred)
		``
		(The online program has been corrected.)

74	line 12	replace "the the" with one "the"
198	line 2	replace "the the" with one "the"
225	line 24	replace "the the" with one "the"
240	line 7	replace "the the" with one "the"
253	line 4 of last paragraph	replace "the the" with one "the"
323	line 11 of middle paragraph	replace "the the" with one "the"
394	line 7 of 2nd paragraph	replace "the the" with one "the"
408	line 2	replace "the the" with one "the"
520	line 10 of 3rd paragraph	replace "the the" with one "the"
27	4th paragraph, last sentence	Change the position of the closing parenthesis. Change "(i.e., 1/2, and the long-run relative frequency of tails should also be exactly 1/2)." to

Page No.	Area/Element	Correction
		"(i.e., 1/2**)**, and the long-run relative frequency of tails should also be exactly 1/2.
123-124	sentence that spans bottom of p. 123 to top of p. 124	Change the position of the closing parenthesis. Change "(i.e., when $t = 3$, the politician … he started**)**." to "(i.e., when $t = 3$**)**, the politician … he started."
392	next to last line of Equation 15.3	Delete the superfluous "+" sign in front of the fraction in the innermost parentheses.
156	4ᵗʰ paragraph, last line	Change "and and" to only one "and"
211	2ⁿᵈ line of last paragraph	Change "and and" to only one "and"
11	first line	Change "numistmatist" to "numismatist"
11	Footnote 1	Change "numistmatist" to "numismatist"
126	Equation 7.2, middle line	In the condition, $P(\theta+1) < P(\theta)$, change "<" to "≤"
159	Equation 8.1, first line	At the end of this line, the term $p(y_j)$ should be $p(y_{2j})$ In other words, the subscript should be 2j, not just j.
196	5ᵗʰ paragraph, line 3	beta(θ, should be beta(θ| In other words, the comma should be a vertical.
104	6 lines from bottom	Delete semi-colon after p(D).
123	4 lines from bottom	Insert one more closing parenthesis before the period. It should read, "(i.e., 50% x (1 – 3/4))."
123	Line 3	Change "we just stay at $\theta = 5$" to "we just stay at $\theta = 4$"

Figure 16.8, lower right, follows on next page.

Data with 95% HDI & Mean of Posterior Predictions
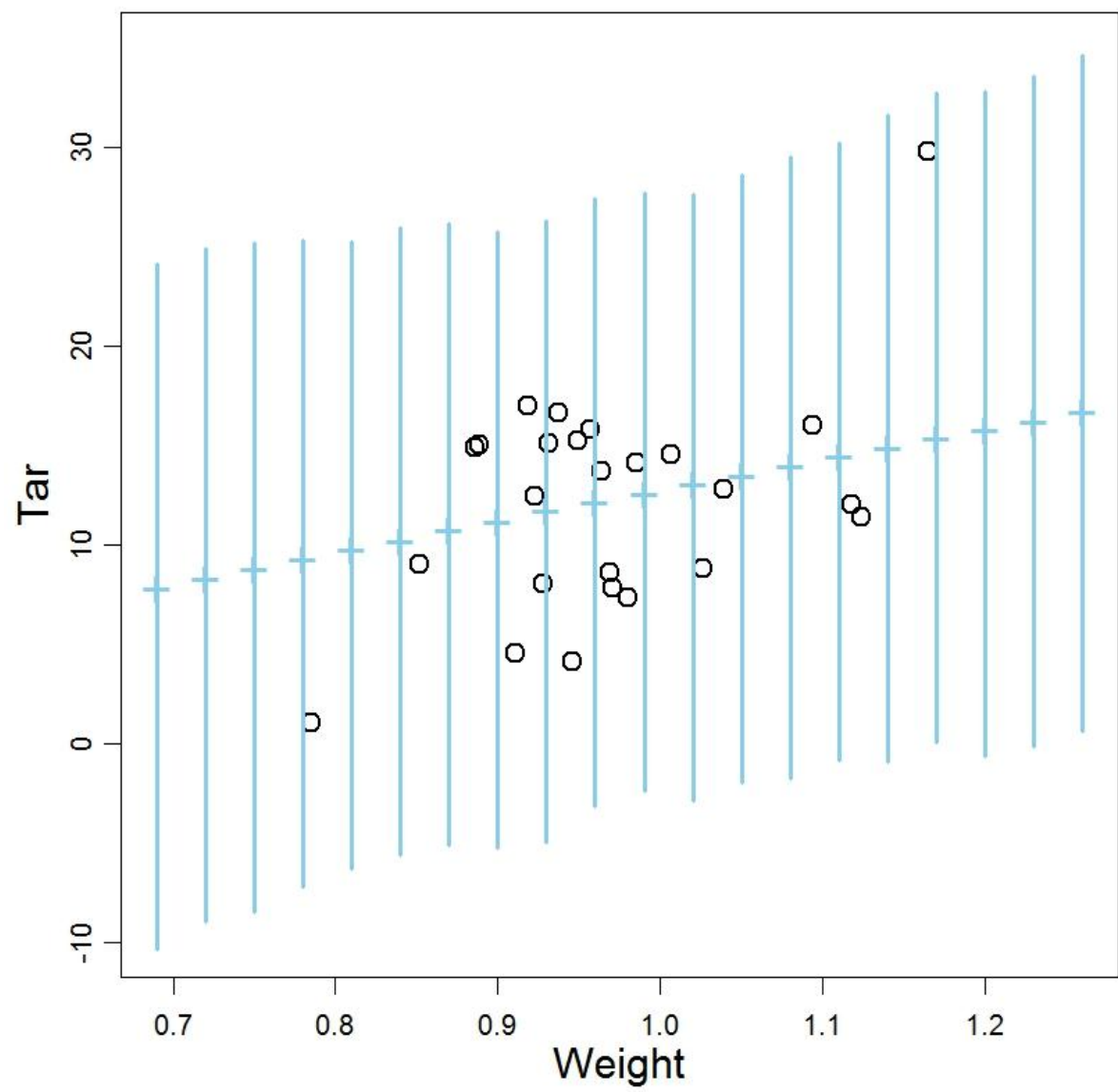
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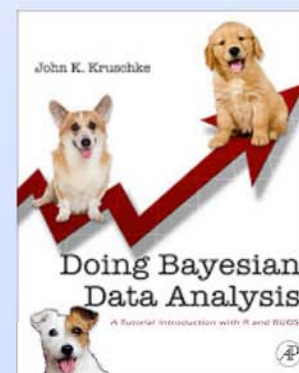
Monday, January 7, 2013

Bayesian multiple linear regression with interaction: Erratum

Background: In regression models, the posterior distribution on the regression coefficients and intercept can be strongly correlated, causing some MCMC samplers to become inefficient as they "bang into the walls" of the diagonal ridge in parameter space. There are various ways to address this problem, but one simple way is by standardizing the data (or at least subtracting out the mean), and then converting the MCMC-derived parameters back to the original scale of the data. This approach was taken in the book (DBDA) for using BUGS, and continued, vestigially, in the programs that were converted to JAGS even though JAGS is often less susceptible to the problem.

The news in this post is that a reader, Francis Campos, caught an error in the formulas for the translation from standardized data to original-scale data, for the particular case of the multiple linear regression model with *two predictors and a multiplicative interaction*. Specifically, part of Equation 17.5, at the top of p.472, has two subscripts reversed, and should be changed as shown in red here:

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The Book (click it for info):

$$+ \left(\zeta_1 s_y \frac{1}{s_1} - \zeta_{1 \times 2} s_y \frac{m_1}{s_1} \frac{1}{s_2} \right) x_1$$

$$\underbrace{\hspace{8cm}}_{\beta_1}$$

$$+ \left(\zeta_2 s_y \frac{1}{s_2} - \zeta_{1 \times 2} s_y \frac{1}{s_1} \frac{m_2}{s_2} \right) x_2$$

$$\underbrace{\hspace{8cm}}_{\beta_2}$$

Correction to Eqn. 17.5, top of p. 472

It turns out that the error was not only in the printed equation. It was also in the programs MultiLinRegressInterBrugs.R and MultiLinRegressInterJags.R, and this error caused the graphical output to be wrong as well. The corrected programs are now available at the program repository, and the corrected figures are included below. (In a separate program, I verified the new results simply by removing the standardization of the data and the transformation back to original scale. JAGS handles the unstandardized, original-scale data very efficiently.) Fortunately, nothing conceptual in the discussion in the book needs to be changed. All the conceptual points still apply, even though the graphical details have changed as shown here:
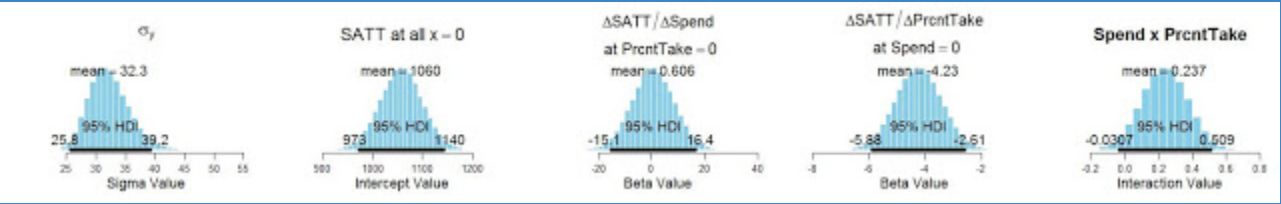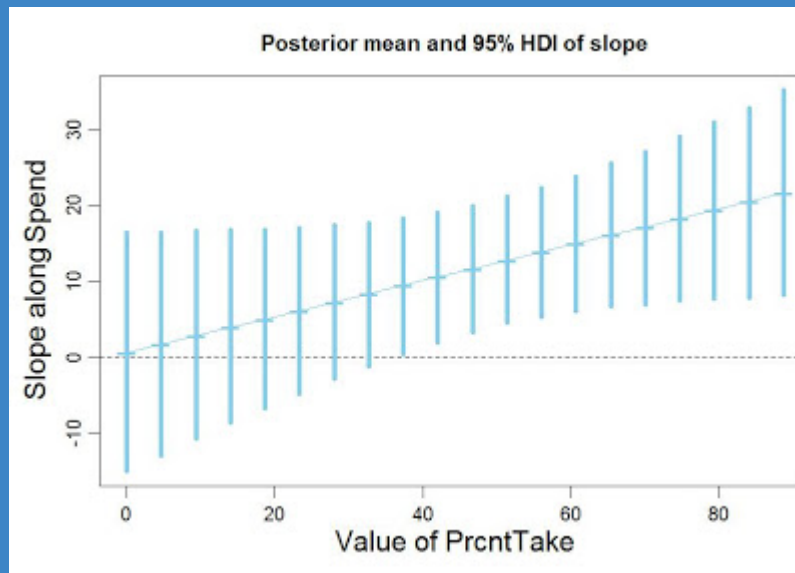
Top of Fig. 17.9, p. 473, corrected.
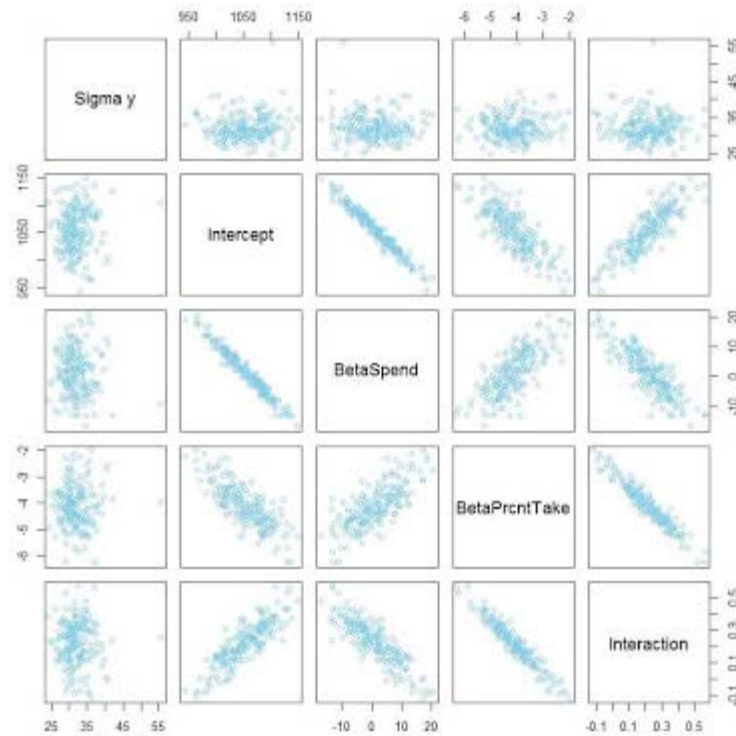
Bottom of Fig. 17.9, p. 473, corrected.
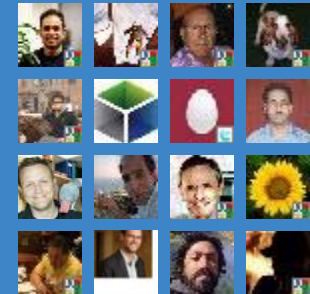
Figure 17.10, p. 474, corrected.

My thanks to Francis Campos for finding the error and alerting me to it!

No comments:

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