Errata and Updates for ASM Exam MAS-II (First Edition) Sorted by Date

Practice exam 4:7 is defective in that none of the answer choices are correct. Note the correction to practice exam 4:38, page 597.

[11/13/2020] On page 597, in question 38, assume that the means of the 4 variables are 0.

[11/12/2020] On page 585, in question 7, change TREATMENT_i to TREATMENT_j. Also change u_{0i} to u_{0j} and u_{1i} to u_{1j}.

[11/12/2020] On page 721, in the solution to question 7, change the last two sentences to "The intercept is a level 2 fixed effect, leaving one level 1 effect. Number of degrees of freedom is $96-2-12=\boxed{\mathbf{83}}$." None of the answer choices is correct.

[11/11/2020] On page 708, in the solution to question 24, change the formula on the final line to $20+1.60\sqrt{44\frac{4}{9}}=\boxed{\mathbf{30.7}}$. **(E)**

[11/6/2020] On page 477, in exercise 38.27, on the second line, change $\lambda=2$ to $\lambda=0.2$.

[11/5/2020] On page 467, in exercise 38.4, in the last three split choices, replace X_1 with X_2, so that they read:

III $R_1(2,0)=\{X \mid X_2<0\}$ and $R_2(2,0)=\{X \mid X_2\ge 0\}$

IV $R_1(2,1)=\{X \mid X_2<1\}$ and $R_2(2,1)=\{X \mid X_2\ge 1\}$

V $R_1(2,2)=\{X \mid X_2<2\}$ and $R_2(2,2)=\{X \mid X_2\ge 2\}$

[10/27/2020] On page 256, replace the solution to exercise 23.3 with

$$\text{ICC}=\frac{77}{105+54+77}=\boxed{\mathbf{0.326271}}$$

[10/15/2020] On page 307, in exercise 28.6, in the table, for Alumni ID 3, change "Years since passing the entrance exam" from 10 to 20.

[10/15/2020] On page 313, in the solution to exercise 28.4, replace the paragraph on page 313 with

Summing up the posterior column we get 0.11940. We may divide the unnormalized posterior by this number to get the normalized posterior. Or we can multiply our desired percentile by this number: 0.9(0.11940) = 0.10746, and then add up the highest values of the unnormalized posterior until they add up to more than this number. We find that adding the values for $\theta=4,5,6$ results in 0.10715 while adding the values for $\theta=4,5,6,7$ results in 0.11426, a sum greater than 0.10715, so the 90% HPDI is $\boxed{\mathbf{[4,7]}}$, or (a,b) where $3<a\le 4$ and $7\le b<8$.

[10/15/2020] On page 314, in the solution to exercise 18.12, replace the fourth line (equation (*)) and everything after it with

$$0.5a\frac{2}{0.3}a+0.5(1-b)\frac{2}{0.7}(1-b)=\frac{a^2}{0.3}+\frac{(1-b)^2}{0.7} \tag{*}$$

Also, $p(a)=2a/0.3$ and $p(b)=2(1-b)/0.7$, and they are equal, so

$$\frac{a}{0.3}=\frac{1-b}{0.7}$$

$$1-b=\frac{7}{3}a$$

Set (*) equal to 0.1 and substitute $\frac{7}{3}a$ for $1-b$ and we get

$$\frac{a^2}{0.3}+\frac{\left(\frac{7}{3}a\right)^2}{0.7}=0.1$$
$$\frac{80}{3}a^2=0.1$$
$$a=\boxed{\mathbf{0.06124}}$$
$$b=1-\frac{7}{3}a=\boxed{\mathbf{0.85711}}$$

[10/15/2020] On page 345, last line, replace “diamonds” with “circles”. On page 346, first line, replace “diamonds” with “circles”. In the third bullet point on that page, first line, replace “diamond” with “circle”.

[10/15/2020] On page 358, replace the solution to exercise 31.14 with

For AIC you start with the deviance at the posterior means. You add twice the number of parameters. There are 3 parameters (α, β, σ), so you'd add 6. AIC is therefore $122.2+6=128.2$.

For DIC, start with the average deviance, 126.1. You add the difference between the average deviance and the deviance at the means. Here, that is $126.1-122.2=3.9$. The result is $126.1+3.9=130.0$

The difference is $130.0-128.2=\boxed{\mathbf{1.8}}$. AIC is lower.

[10/15/2020] On page 392, in the solution to exercise 33.7, change the final answer 206.044 to 206.954.

[10/15/2020] On page 414, on the second line of the paragraph under Gamma-Poisson, change “the less” to “the more”.

[10/15/2020] On page 421, replace the fourth and later lines of the solution to exercise 35.11 with

We want to develop the negative binomial. It is easier to do this using the parametrization of the exam tables. With that parametrization, α is $\lambda/4=0.818731/4=0.204683$ and $\theta=4$. The negative binomial then has $r=0.204683$ and $\beta=4$. The probability of 2 is

$$\Pr(Y_i=2\mid X_i=3)=\left(\frac{(1.2046383)(0.204683)}{2}\right)\left(\frac{4^2}{5^{2.204683}}\right)=\boxed{\mathbf{0.056760}}$$

[10/5/2020] On page 187, in the solution to exercise 16.5, replace the last 4 lines with

$$\widehat{\text{VHM}}=\frac{(200-400)^2+2(500-400)^2}{2}-\frac{50{,}833.33}{12}=25{,}763.89$$
$$\hat{k}=\frac{50{,}833.33}{25{,}763.89}=1.9730$$
$$\hat{Z}=\frac{12}{12+1.9730}=0.858796$$
$$P_W=0.858796(200)+0.141204(400)=\boxed{\mathbf{228.24}}$$

[10/5/2020] On page 224, replace the solution to exercise 19.3 with

This model has one random effect, the apple, with a random intercept. $\mathbf{D}=\begin{pmatrix}1.43\end{pmatrix}$. There are 3 observations within a subject, and no correlation between these observations (at least none is stated in the question), so $\mathbf{R}=\begin{pmatrix}0.87&0&0\\0&0.87&0\\0&0&0.87\end{pmatrix}$. Since there is only a random intercept, the $\mathbf{Z}$ matrix is $\begin{pmatrix}1\\1\\1\end{pmatrix}$. Then

$$\mathbf{V}=\mathbf{ZDZ}^t=\begin{pmatrix}1\\1\\1\end{pmatrix}\begin{pmatrix}1.43\end{pmatrix}\begin{pmatrix}1&1&1\end{pmatrix}+\begin{pmatrix}0.87&0&0\\0&0.87&0\\0&0&0.87\end{pmatrix}=\begin{pmatrix}2.30&1.43&1.43\\1.43&2.30&1.43\\1.43&1.43&2.30\end{pmatrix}\qquad\textbf{(C)}$$

[10/5/2020] On page 410, one line above the tables, change $e^{\text{fitted value}}/(1-e^{\text{fitted value}})$ to $e^{\text{fitted value}}/(1+e^{\text{fitted value}})$.

[9/25/2020] On page 12, in the solution to exercise 1.1, change the last line to

$$=\Phi(0.13)-\Phi(-0.13)=0.5517-(1-0.4483)=\boxed{\mathbf{0.1034}}$$

[9/24/2020] On page 294, on the last line of the solution to exercise 26.14, change $0.8774883(3^{0.4884623}=\boxed{\mathbf{1.500711}}$ to $0.8774883(6^{0.4884623}=\boxed{\mathbf{2.105421}}$.

[9/21/2020] On page 4, replace the last sentence of the page with

So $a=1.645\sqrt{\text{variance}}=1.645\sqrt{40{,}000}=329$, and this is $329/5000=\boxed{\mathbf{6.58\%}}$ of the mean.

[9/21/2020] On page 318, on the third line, replace $10\sqrt{\pi}$ with $10\sqrt{2\pi}$ in two places.

[9/15/2020] On page 97, replace the solution to exercise 10.1 with

We add the number of periods to a and the total claims to b, obtaining $a_*=9+8=17$, $b_*=1+2=3$, and the posterior mean of θ is $17/(17+3)=\boxed{\mathbf{0.85}}$.

[8/24/2020] On page 207, in the solution to exercise 17.3, delete $+u_{2j}\times\text{AGENCYYEARS}_j$ from the second line. There cannot be random effects on level-2 variables.