

## Errata and updates for ASM Exam SRM Study Manual (Second Edition Third Printing) sorted by page

- [9/9/2021] On page 24, in exercise 2.23, on the eighth line, change “volumne” to “volume”.
- [9/9/2021] On page 32, in the solution to exercise 2.27, on the first line, delete the first “for males”.
- [9/9/2021] On page 49, in exercise 3.30, on the fifth line, change  $bary$  to  $\bar{y}$ .
- [9/9/2021] On page 51, in exercise 3.35, answer choices (B), (C), and (D), change the clauses after the commas, which say “reject at . . .”, to “do not reject at . . .”.
- [9/9/2021] On page 56, in the solution to exercise 3.30, on the second line, change  $\bar{x}$  to  $x$  and change  $\mathbf{barx}^2$  to  $x^2$ .
- [8/31/2021] On page 81, at the end of the fourth paragraph of Section 5.3, change “low” to “high”.
- [9/9/2021] On page 86, delete exercise 5.14, which is a duplicate of exercise 5.8.
- [9/9/2021] On page 94, in the solution to exercise 5.15, 4 lines from the end, change “multiplying this by 1.642599” to “multiplying this by 0.622721”.
- [9/9/2021] On page 104, in the solution to exercise 6.7, on the first line, change “thin” to “thing”.
- [9/9/2021] On page 110, in step 5 of “Forward subset selection”, on the second line, change  $d = 0$  to  $p = 0$ .
- [8/10/2021] On page 122, in the solution to exercise 7.27, on the last line, change  $\left(\frac{n-1}{n-p}\right)$  to  $\left(\frac{n-1}{n-p-1}\right)$ .
- [8/10/2021] On page 123, in the solution to exercise 7.29, on the second line, change  $\left(\frac{n-1}{n-p}\right)$  to  $\left(\frac{n-1}{n-p-1}\right)$ .
- [9/9/2021] On page 142, in the solution to exercise 8.12, change the final answer to **10.43478**.
- [9/26/2021] On page 145, the wording for prediction and confidence intervals is confusing. Make the following changes:

- Change the paragraph containing equations (9.2) and (9.3) to

The variance of the realized value of  $y$  is the variance of  $y^*$  plus the variance of the error term, which is estimated by  $s^2$ . Accordingly, a  $1 - \alpha$  confidence interval for the predicted value  $y^*$  is

$$\hat{y}^* \pm t_{1-\alpha/2} s \sqrt{\frac{1}{n} + \frac{(x^* - \bar{x})^2}{\sum(x_i - \bar{x})^2}} \quad (1)$$

and a  $1 - \alpha$  prediction interval for the realized value of  $y$  is

$$\hat{y}^* \pm t_{1-\alpha/2} s \sqrt{1 + \frac{1}{n} + \frac{(x^* - \bar{x})^2}{\sum(x_i - \bar{x})^2}} \quad (2)$$

There are  $n - 2$  degrees of freedom.

- On the first line of the next paragraph, change “prediction” to “realized value”.

- [9/9/2021] On page 150, in the solution to exercise 9.7, the answer key should be **(C)** rather than **(B)**.
- [9/9/2021] On page 154, on the third line of the paragraph that begins with “Omitting variables may lead”, delete one of the periods after “model”.

- [9/9/2021] On page 159, 4 lines from the bottom of the page, change  $b(\theta) = \theta$  to  $b(\theta) = e^\theta$ .
- [9/9/2021] On page 163, in Table 11.3, on line 3, change “family” to “family”.
- [9/9/2021] On page 174, in exercise 11.22, in the table, on the row for Zone 4, degrees of freedom (df) should be 0.
- [10/3/2021] On page 216, in the first full paragraph, on the second line, change “to make  $e^{\alpha_i}$  a gamma distribution” to “to make  $\alpha_i$  a gamma distribution”. In fact,  $e^{\alpha_i}$  follows a loggamma distribution.
- [9/9/2021] On page 235, in exercise 14.9, on the first line, change “varialbes” to “variables”. On the second line, change  $mu_i$  to  $\mu_i$ .
- [9/9/2021] On page 235, in exercise 14.10, on the first line, change  $x_1, cdots, x_5$  to  $x_1, \dots, x_5$ .
- [9/8/2022] On page 256, in exercise 15.10, in the three bullets, the models should be numbered as Model I, Model II, and Model III respectively.
- [9/9/2021] On page 262, in the solution to exercise 15.15, the signs of the  $\varepsilon_i$  in the table should be reversed; they should also be reversed in the two fractions two and five lines below the table. Thus the table and the following lines should read:

$X_i$ in training set	Nearest two points	Fitted value	$Y_i$	$\varepsilon_i$
4	4,12	$\frac{3+15}{2} = 9$	3	-6
7	4,12	$\frac{3+15}{2} = 9$	8	-1
12	12,14	$\frac{15+22}{2} = 18.5$	15	-3.5
14	14,15	$\frac{22+30}{2} = 26$	22	-4
15	14,15	$\frac{22+30}{2} = 26$	30	4
21	15,22	$\frac{30+53}{2} = 41.5$	40	-1.5
22	15,22	$\frac{30+53}{2} = 41.5$	53	11.5

The MSE on the training data is

$$\frac{(-6)^2 + (-3.5)^2 + (-4)^2 + 4^2 + 11.5^2}{5} = \boxed{42.5}$$

We divide by 5 since no parameters are estimated.

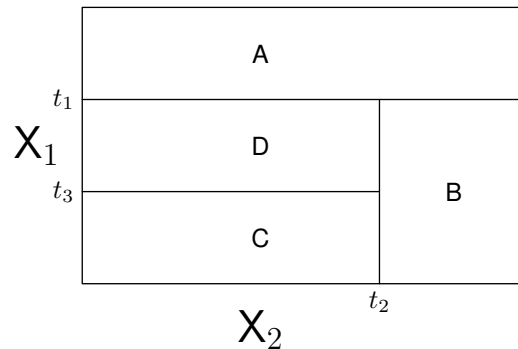
The MSE on the test data is

$$\frac{(-1)^2 + (-1.5)^2}{2} = \boxed{1.625}$$

- [9/9/2021] On page 269, in formula (16.5), a 2 is missing from the numerator. The formula is

$$\text{Residual mean deviance} = -\frac{2 \sum_m \sum_k n_{mk} \ln \hat{p}_{mk}}{n - |T|}$$

- [9/9/2021] On page 274, in exercise 16.6, in the plot of choice (B),  $t_1$  and  $t_3$  should be interchanged so that it looks like this:



[3/29/2021] On page 284, in the solution to exercise 16.7, on the fifth line, change “86 + 82 + 81 + 4(9) = 286 to 82 + 81 + 11 + 86 + 4(9) = 296.

[8/24/2021] On page 285, exercise 17.6, while the exercise can be worked out, the second and third bullets are false. The first principal component loading for  $X_1$  is  $1/\sqrt{2}$ , and the first principal component loading for  $X_2$  is negative.

[4/27/2021] On page 303, in the solution to exercise 17.12, replace II with  
 When a variable is scaled, it is divided by its standard deviation to make the variance 1. Since the first principal component has maximal variance, it will put lower loading on variables with lower variance. The higher the variance of the original variable, the greater the reduction in loading.

Comparing the unscaled and scaled biplots, we see that  $X_3$ 's loading on the first principal component was significantly decreased whereas the loadings of the other variables on the first principal component were increased. We conclude that  $X_3$  has the highest variance. ✓

[9/9/2021] On page 307, in the sidebar, 2–3 lines below the displayed equation, switch  $i$  and  $i^*$ : “once for each  $i$  (for the first summand) or for each  $i^*$  (for the second summand)”.

[9/9/2021] On page 318, in exercise 18.18, replace the last line with the answer choices:

- (A) I only                      (B) II only                      (C) III only                      (D) I, II, and III
- (E) The correct answer is not given by (A) , (B) , (C) , or (D) .

[8/25/2021] On page 337, change the second line of the solution to exercise 19.21 to

$$\frac{100}{4} \left( \frac{-1}{2} + \frac{-2}{1} + \frac{3}{6} + \frac{1}{4} \right) = \boxed{-43.75}$$

[9/9/2021] On page 339, 4 lines from the bottom of the page, the error should be  $y_i - \hat{y}_i$ , reversing the signs of the errors. Thus the last 4 lines on the page should read

$$\varepsilon_t = y_t - \hat{y}_t = y_t - (78.75 - 0.75y_{t-1})$$

We cannot calculate  $\hat{y}_1$ , so we can't calculate the first error. The other errors are  $-2.5, -0.5, 0.25, -2.75$ , and  $-2.25$ . The mean error is  $-1.55$ . The variance of the error is

$$\frac{1}{6-3} \left( (-2.5 - (-1.55))^2 + (-0.5 - (-1.55))^2 + (0.25 - (-1.55))^2 + (-2.75 - (-1.55))^2 + (-2.25 - (-1.55))^2 \right) = \boxed{2.391667}$$

[10/11/2021] On page 347, 3 lines above Section 21.2, change  $\hat{y}_{T+1} = \hat{y}_T$  to  $\hat{y}_{T+1} = \hat{s}_T$ .

[9/9/2021] On page 362, in question 4, the answer choices should be values, not ranges. Replace the answer choices with

(A) 80                      (B) 160                      (C) 320                      (D) 640                      (E) 1280

[9/9/2021] On page 442, in the solution to question 12, replace the answer key with **(A)**.

[9/9/2021] On page 450, in the solution to question 24, on the third line, change  $\mathit{mat\bar{h}b}x_1$  to  $\bar{x}_1$ .