

## Errata and updates for ASM Exam C/Exam 4 Manual (Thirteenth Edition) sorted by date

Note the correction to Practice Exam 2:19, page 1146.

- [1/28/2012] On page 317, in the solution to exercise 18.21, on the second line, change “are” to “is”.
- [1/27/2012] On page 1288, in the solution to question 28, on the fourth line, change  $0.1q$  to  $0.1v$ .
- [1/25/2012] On page 56, one line above equation (\*), change  $\int_0^x a(x)dx$  to  $\int_0^x a(t)dt$ .
- [1/24/2012] On page 85, in the solution to exercise 5.5, on the third line, change “begin” to “being”.
- [1/21/2012] On page 1401, in the solution to question 34, on the second line, remove the negative sign in  $\frac{-1500}{x^2}$ .
- [1/10/2012] On page 10, 7 lines from the bottom of the page, change  $2e^{-u}$  (at the end of the line) to  $2e^u$ .
- [1/4/2012] On page 1034, in the solution to exercise 53.15, the final answer should be **0.5115**.
- [1/3/2012] On page 260, in the solution to exercise 15.9, on the first line of the paragraph beginning “Strictly speaking”, delete the words “a multiple of” before “96”.
- [1/3/2012] On page 1379, in the solution to question 16, on the second line of the page, reverse the inequality sign:  $N \leq \frac{n_0 P}{n_0 - P}$ .
- [1/1/2012] On page 751, in the solution to exercise 38.18, on the last line, change  $n_0^2$  to  $n_0$ .
- [12/31/2011] On page 147, in the solution to exercise 8.5, replace the eighth line with  
Dividing by  $1 - p = 0.1$ , we get 974.567, which is the mean excess loss. Then adding  $1000\sqrt{0.9}$  to 974.567, we get that  $\text{TVaR}_{0.90}(X) = \mathbf{1923.25}$ .
- [12/30/2011] On page 972, on the eighth line of the page, replace 1.125 in the denominator by 0.86875.
- [12/24/2011] On page 317, in the solution to question 18.19, on the first two lines of the page, the third equals sign should be changed to a minus.
- [12/15/2011] On page 136, at the end of the second line, delete one of the semicolons.
- [12/15/2011] On page 332, in exercise 19.5 item 2, change “form” to “from”.
- [12/14/2011] On page 223, in the solution to exercise 13.19, on the last line of the page, invert the second fraction:  $\frac{1 - (500/800)^2}{1 - (200/500)^2}$ .
- [11/30/2011] On page 964, in the solution to exercise 49.19, replace all ten  $q_{35}$ 's with  $Q$ 's.
- [11/17/2011] On page 767, in Quiz 40-1, replace “are given” with “give”.
- [11/9/2011] On page 638, on the first line of the solution to Quiz 32-1, delete “it”.
- [10/25/2011] On page 1317, the solution to question 4 is incorrect. The correct solution is  
A payment of 2500 for the first coverage is equivalent to a loss of 3000. The likelihood of 3000, or the density of a loss of 3000 is  
$$f(3000) = \frac{2(2000^2)}{5000^3} = 6.4 \times 10^{-5}$$
  
A payment of 2500 for the second coverage is equivalent to a loss of 3500. The likelihood of 3500, or the density of a loss of 3500 given that it is greater than 1000 is  
$$f(3500) = \frac{2(2000^2)}{5500^3} = 4.80841 \times 10^{-5}$$

The question is asking for the average size of the next payment, so it is asking for the average payment per payment, or the mean excess loss. For a Pareto, the mean excess loss at  $d$ , by equation ??, is  $e(d) = (\theta + d)/(\alpha - 1)$ . Thus, for a deductible of 500, the mean excess loss is  $(2000 + 500)/1 = 2500$ , and for a deductible of 1000 the mean excess loss is  $(2000 + 1000)/1 = 3000$ . We weight these by the product of the prior ( $2/3$  vs.  $1/3$ ) and the likelihoods. The expected claim given a payment of 2500 is then

$$\frac{(2/3)(6.4 \times 10^{-5})(2500) + (1/3)(4.80841 \times 10^{-5})(3000)}{(2/3)(6.4 \times 10^{-5}) + (1/3)(4.80841 \times 10^{-5})} = \boxed{2636.54} \quad (\text{A})$$

- [10/17/2011] On page 71, in the solution to exercise 4.10, on the first line, change  $a(x) = x$  to  $a(x) = 2x$ .
- [10/16/2011] On page 265, in the solution to exercise 15.27, 5 lines from the end, change 213.3443 to 213.4334.
- [10/12/2011] On page 185, on the second line from the end of the first paragraph of Section 11.2, change the first “question” to “questions”.
- [10/9/2011] On page 1352, in the solution to question 22, on the fourth line, reverse 10.5 and 11.5 on the left side:  $\mathbf{E}[(S - 10.5)_+] - \mathbf{E}[(S - 11.5)_+]$
- [10/6/2011] On page 358, in the solution to exercise 21.11, on the second line, replace “ $m = \theta$  and  $q = n = 50$ ” with “ $m = n = 50$  and  $q = \theta$ ”.
- [10/5/2011] On page xv, at the end of the first line of the paragraph of the first bullet, add the word “include”.
- [10/5/2011] On page 28, on the second displayed line of the answer to Example 2B, in the exponent, delete one of the “/”’s.
- [10/5/2011] On page 125, in the solution to exercise 7.13, on the third line, change the period after the first “doubled” to a comma.
- [9/27/2011] On page 20, in the solution to exercise 1.6, on the first displayed line, change  $\mathbf{E}[X + Y]^3$  to  $\mathbf{E}[(X + Y)^3]$ .
- [9/27/2011] On page 29, on the second line of Example 2E, replace  $x$  with  $X$ .
- [9/27/2011] On page 38, on the second line of the page, replace  $r(x)$  with  $r(\theta)$ .
- [9/27/2011] On page 350, 3 lines above equation (21.3), delete one of the periods after “constant”.
- [9/27/2011] On page 388, one line below the first two displayed lines, remove the right parenthesis after Nelson-Åalen.
- [9/27/2011] On page 456, in the first line of the answer to Example 26D, change “ar” to “are”.
- [9/27/2011] On page 720, on the last displayed line of the page, remove one of the two consecutive negative signs after the equals sign, and change 1.31 to 13.1.
- [9/27/2011] On page 856, in the second sentence of the second paragraph, delete the “e” after the word “the”.
- [9/27/2011] On page 972, on the first line of the page, delete the “4” that is after “ $v$ ”.
- [9/27/2011] On page 1326, in the solution to question 31, on the second line, change the  $z^2$  in the numerator to  $z$ .
- [8/26/2011] On page 200, in the solution to exercise 11.25, on the last line, 0.9298775 should be 0.929775.
- [8/22/2011] On page 357, in the solution to exercise 21.7, on the second to last line, change the last + to a –.
- [8/22/2011] On page 729, in the solution to exercise 37.12, three lines from the end, change “2 free parameters in  $H_0$ ” to “no free parameters in  $H_0$ ”.
- [8/10/2011] On page 945, on the last displayed line of the page, change  $\frac{52,000}{9}$  to  $\frac{340,000}{9}$ .
- [8/6/2011] On page 1069, in exercise 55.5, on the last line of the table, replace  $n$  with  $m$ .

- [8/5/2011] On page 32, replace the second sentence of Subsection 2.3.4 with  
If  $Y$  is exponential with mean  $\mu$ , then  $X = Y^{1/\tau}$  is Weibull with parameters  $\theta = \mu^{1/\tau}$  and  $\tau$ .
- [8/5/2011] On page 318, the solution to exercise 18.24 is incorrect starting with the second sentence. The correct solution is  
The aggregate loss distribution is equivalent to Bernoulli claim counts with  $q = \beta/(1 + \beta) = 0.2/1.2 = 1/6$  and exponential claim sizes with mean  $\theta(1 + \beta) = 8000(1.2) = 9600$ . To find the 90th percentile of  $S$ , since the probability of a loss is  $1/6$ , we need  $x$  for which  $\Pr(S > x) = 0.1$  and  $\Pr(S > x) = \Pr(N = 1)\Pr(X > x) = \frac{1}{6}\Pr(X > x)$ , so we need  $\Pr(X > x) = 0.6$ . Thus
- $$e^{-x/9600} = 0.6$$
- $$x = -9600 \ln 0.6 = 4903.93$$
- The average value of  $S$  given  $S > 4903.93$ , due to lack of memory of the exponential, is 9600, so  $\text{TVaR}_{0.9}(S) = 4903.93 + 9600 = \boxed{14,503.93}$ .
- [8/5/2011] On page 542, in the second point under the second bullet, at the end of the first line continuing into the second line, delete the words “below that number”. The sentence should read “... number of observations divided by the number of observations below that number.”
- [8/5/2011] On page 993, on the second line of the solution to exercise 51.2, delete two “n”’s in Bühlmannnn.
- [7/29/2011] On page 756, on the displayed line in the answer to Example 39A, replace  $n_0$  with  $n_F$ .
- [7/28/2011] On page 678, 4 lines from the end of the solution to exercise 35.1, remove the inner square on  $F_n(1)$ : make it  $(F_n(1))^2$ .
- [7/28/2011] On page 678, on the first displayed line of the solution to exercise 35.2, remove the inner square from  $F_n(0.05)$ ; make it  $(F_n(0.5))^2$ .
- [7/27/2011] On page 657, on the heading row, fifth column of the table,  $F(c_j)$  should be  $F^*(c_j)$ .
- [7/24/2011] On page 394, in exercise 23.4, on the line after the table, add a period after “interval”.
- [7/24/2011] On page 457, one line above the exercises, change  $(100 - 75)$  to  $(100 - 25)$ .
- [7/22/2011] On page 386, 2 lines from the bottom of the second paragraph, remove the right parenthesis after 0.6. On the last line of the paragraph, add “is” between  $(8000, 10,000)$  and  $(0.1)(0.4)$ .
- [7/19/2011] On page 299, on the fourth line, change the highlighted answer from 0.5888 to 0.8436.
- [7/12/2011] On page 108, in the solution to exercise 6.19, on the second line, change paymenb to payment.
- [6/23/2011] On page 1400, in the solution to question 33, two lines after the itemized list, replace “ $a = 10, \dots 10(\frac{9}{9+11}) = \boxed{5.50}$ ” with “ $a = 12, b = 10$ , and mode  $10(\frac{11}{11+9}) = \boxed{5.50}$ ”.
- [6/20/2011] On page 1416, the table omits the correspondence of questions 283–289. They correspond to questions M-F06: 22,29,30,31,32,39, and 40 respectively, whose solutions are found on pages 1391–1392.
- [6/16/2011] On page 1146, in question 19, on the third line, change “varies by exposure” to “varies by group”.
- [6/10/2011] On page 1089, in exercise 56.1, the last column of the table is obviously inconsistent with the previous column, and the  $S_i^2$  column is inconsistent with the previous column. This question was adapted from the sample exam, but the  $t$  column had to be changed due to a change in the Ross textbook when it was on the syllabus, and the result was an inconsistent table. To fix the question, replace the table and the paragraph preceding the table with:

You want to be 95% certain that your estimate will not differ from the true value by more than 0.01 units. Your estimates of profitability,  $X_i$ , for the first 120 policies reviewed, together with the indicated statistics, are shown below.

$i$	$X_i$	$\bar{X}_i$	$S_i^2$	$S_i$	$S_i/\sqrt{i}$
1	1.0795	1.0795			
2	1.0559	1.0677	0.00027908	0.0167	0.011813
3	1.1062	1.0806	0.00063266	0.0252	0.014522
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
100	1.0066	1.0787	0.00269721	0.0519	0.005193
101	1.1691	1.0796	0.00275115	0.0525	0.005219
102	1.0834	1.0796	0.00272405	0.0522	0.005168
103	1.1272	1.0801	0.00271931	0.0521	0.005138
104	1.0722	1.0800	0.00269351	0.0519	0.005089
105	1.1373	1.0806	0.00269886	0.0520	0.005070
106	1.0428	1.0802	0.00268661	0.0518	0.005034
107	1.0759	1.0802	0.00266144	0.0516	0.004987
108	1.1418	1.0807	0.00267174	0.0517	0.004974
109	1.1249	1.0811	0.00266489	0.0516	0.004945
110	1.2350	1.0825	0.00285565	0.0534	0.005095
111	1.0478	1.0822	0.00284056	0.0533	0.005059
112	1.0875	1.0823	0.00281522	0.0531	0.005014
113	1.1149	1.0826	0.00279950	0.0529	0.004977
114	1.1591	1.0832	0.00282611	0.0532	0.004979
115	1.0226	1.0827	0.00283329	0.0532	0.004964
116	0.9668	1.0817	0.00292447	0.0541	0.005021
117	1.1487	1.0823	0.00293761	0.0542	0.005011
118	1.1887	1.0832	0.00300848	0.0548	0.005049
119	1.1303	1.0836	0.00300164	0.0548	0.005022
120	1.0484	1.0833	0.00298673	0.0547	0.004989

[6/10/2011] On page 1092, consistent with the change to the exercise, change the solution to exercise 56.1 to

Your objective is met when the 1.96 times the standard deviation (estimated by the last column,  $S_i/\sqrt{i}$ ) is less than or equal to 0.01, or

$$\frac{S_i}{\sqrt{i}} \leq \frac{0.01}{1.96} = 0.005102$$

(Technically speaking we need a  $t$  coefficient rather than 1.96, but the difference is small for large  $i$ .)  $i =$  104 is the first time that this happens.

[5/25/2011] On page 546, on the first line of Example 30H, change 300 to 261.

[5/24/2011] On page 1121, in the answer to Example 58F, the final answer should be  $29\frac{1}{3}$  instead of  $29\frac{2}{3}$ .

[5/18/2011] On page 138, second line from bottom of page, some parentheses are missing. The line should read

$$= \mathbf{E}[X] \left( \frac{1 - \Phi \left( \frac{\ln(\exp(\mu + z_p \sigma)) - \mu - \sigma^2}{\sigma} \right)}{1 - p} \right)$$

- [5/18/2011] On page 944, on the 6th line of the answer to Example 49B, the  $0.05(3,974,400)$  should be  $0.05^2(3,974,400)$ .
- [5/16/2011] On page 169, in the solution to exercise 9.17, 3 lines from the end, delete “given that it”.
- [5/10/2011] On page 1138, in question 21, on the first and third lines (once apiece), change “psuedorandom” to “pseudorandom”.
- [5/10/2011] On page 1147, in question 20, on the second line, change “psuedorandom” to “pseudorandom”.
- [5/10/2011] On page 1162, in question 6, on the second line, change “psuedorandom” to “pseudorandom”.
- [5/10/2011] On page 1214, in question 12, on the first line, change “psuedorandom” to “pseudorandom”.
- [5/10/2011] On page 1224, in question 11, on the second line, change “psuedorandom” to “pseudorandom”.